Play Well:

Educating for the Prevention of Playing-Related Musculoskeletal Disorders at a Specialist Music School in the UK.

A Physiotherapist-led Action Research Project.

Sarah Upjohn

Wolfson College

University of Cambridge

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This dissertation is submitted for the degree of

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Abstract

This Action Research took place within a specialist music boarding school in England by the school physiotherapist. It was conceived as a direct result of the physiotherapists concerns about the number of preventable and recurrent playing-related musculoskeletal disorders that she was treating in the pupil population, and is set within the framework of studying part-time for a Doctor of Education award.
It aimed to

i. **increase** stakeholder-**awareness** of risk factors for playing-related musculoskeletal disorders in young musicians

ii. **engage** key stakeholders in **change** behaviour to promote practices that place pupils at less risk for playing-related musculoskeletal disorders

Key stakeholders were identified as pupils, parents, instrument teachers, boarding house staff and the music heads of departments.
An audit of physiotherapy notes established the incidence of acute, chronic and recurrent playing-related injuries, and revealed five main risk factors for injury.

There were two complete cycles of Action Research involving the key stakeholders. The first used focus group meetings and surveys to engage key stakeholder groups with issues of playing-related musculoskeletal disorders and to try and increase awareness of the risk factors.

Two critical incidents arose between the first and second cycles of Action Research. The first resulted in the realisation that assessment can drive learning, culminating in the inclusion of an element of knowledge about risk factors for playing-related injury within the internal school instrument assessment process, and the second was the realisation that the occurrence of preventable playing-related injuries was a safeguarding issue, resulting in the development and introduction of a playing-related injury prevention policy at the school.

The effect of the second cycle of Action Research was evaluated via surveys and another audit of physiotherapy notes. The results showed little change in stakeholder awareness of the risk factors for injury, but showed a marked change in pupils behaviour towards management of injuries, with more acute and fewer chronic and recurrent injuries being treated.
This project has generated significant interest beyond the school.

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Numerous friends, who as a result of their tolerance, listening skills, time and kindness now find themselves almost as knowledgeable about this topic as I am.

Finally, family, particularly my mum, my sister and my teenagers, who have hardly moaned at all.

Declaration

This dissertation is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared in the Preface and specified in the text.

It is not substantially the same as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. I further state that no substantial part of my dissertation has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text

It does not exceed the 80,000 word limit set by the Degree Committee of the Faculty of Education.

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Abbreviations

A level	Advanced level (public exams)
AMABO	Association of Medical Advisors to British Orchestras
ASPAH	Australian Society for Performing Arts Health
BAPAM	British Association of Performing Arts Medicine
BIBAC	Bridging Interdisciplinary Bridges Across Cultures
BMus	Batchelor of Music degree
BUPA	British United Provident Association
CPD	Continuing Professional Development
CPS	Centre for Performance Science
CSP	Chartered Society of Physiotherapy
DoE	Department of Education
EdD	Doctorate of Education
fb	facebook
GP	General Practitioner
GSMD	Guildhall School of Music and Drama
GCSE	General Certificate of Secondary Education (public exams)
HCPC	Health and Care Professions Council
HOD/HODs	Head of Department / Heads of Departments
ISME	International Society for Music Education
MA	Master of Arts degree
MDS	Music and Dance Scheme
MMA	Music Masers and Mistresses Association
MU	Musicians Union
NHS	National Health Service
NUT	National Union of Teachers
OFSTED	Office for Standards in Education
PAMA	Performing Arts Medicine Association
PE	Physical Education
PHSE	Personal, Health and Social Education
RAM	Royal Academy of Music
RCM	Royal Academy of Music
UNESCO	United Nations Educational Scientific and Cultural Organization
WHO	World Health Organisation

SECTION ONE - Prelude

Comprising Chapter One

In which the context of the thesis is explored and explained

Chapter One - Introduction

Instrumental musicians typically learn an enormous amount about their instrument and about music, but they tend to be taught little about their body and how to care for it. Yet instrumental musicians are particularly prone to playing-related musculoskeletal injuries. This thesis explores this phenomenon, and Figure1 illustrates three distinct elements of a triad needed for successful and comfortable music making: the music, their instrument, and also their body.

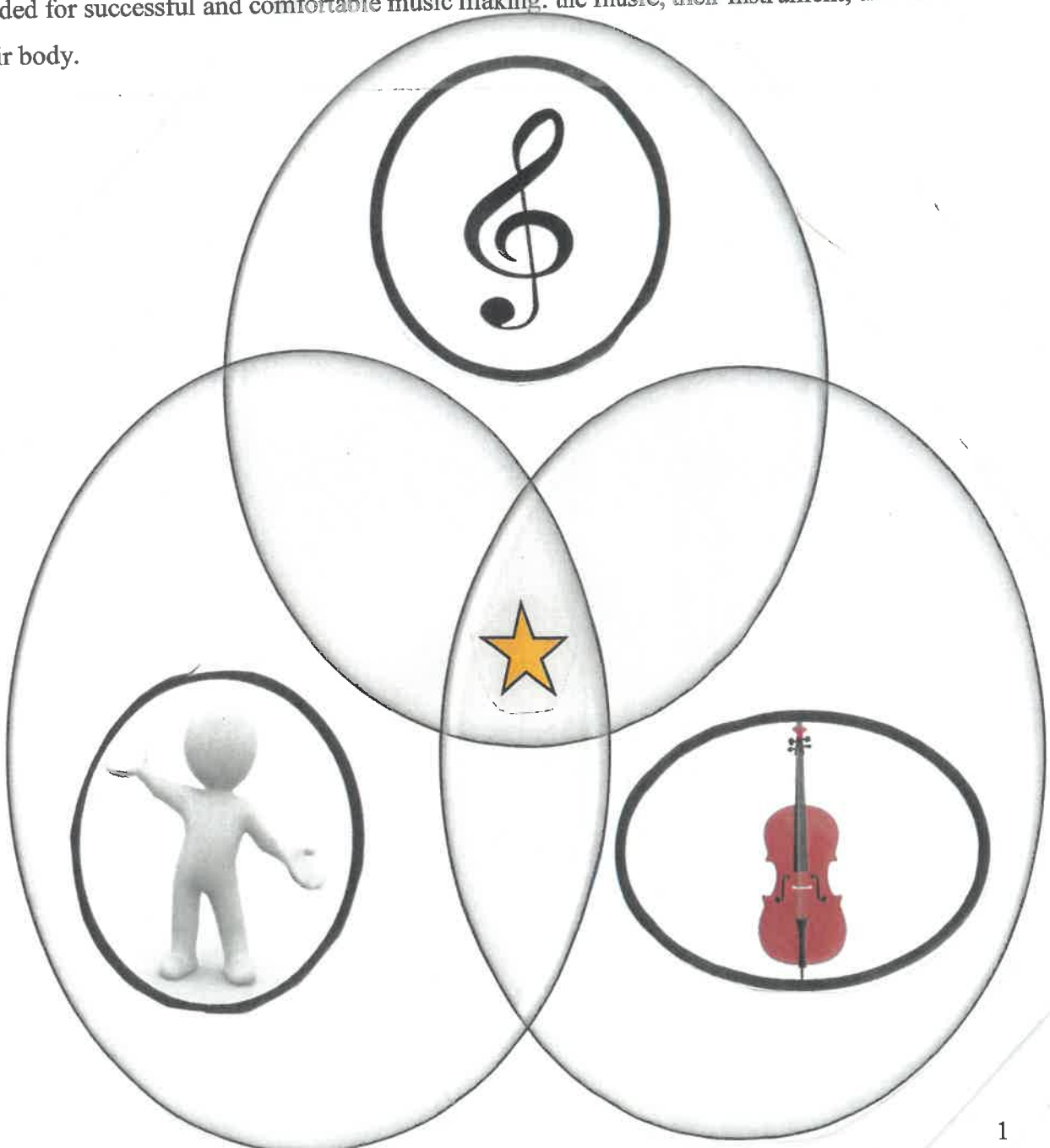


Figure 1 A New Musical Triad

The thesis is nested within the field of the education of classical musicians, and I wanted to write it using a structure that is familiar to all classical musicians. I begin with a prelude which provides an introduction and the context of this work (Section One), and then use classical sonata form, with an exposition of the main themes (Section Two), a development section where these themes are elaborated (Section Three), and a recapitulation which acts to resolve and conclude the piece (Section Four).

It is intended that this will provide a recognisable structure to the writing and it is also an overt acknowledgment of the significant impact of the heritage of classical music on the lives of the stakeholders in this study, and on me.

I am compelled to begin the Prelude by introducing the specific situation, the very 'thing', which led to the development of my role within the school where I work. The problem that emboldened me enough to enrol on the Doctorate of Education programme at the University of Cambridge - thus becoming, as far as we know, the first British physiotherapist ever to study for a Doctorate at the University of Cambridge. The set of circumstances which made me brave enough to undertake this significant piece of work - significant both in terms of time and effort, but also in terms of impact. That which has transformed me from physiotherapist (albeit working in a highly specialised clinical field within a world class institution) to world class, and field-crossing 'researching professional', influencing policy and presenting findings at the World Conference of the International Society for Music Education (see Appendix A).

For nearly eight years it has kept me focused, interested, motivated and, quite simply, troubled enough to keep going when the going got tough, and it has drawn me back and compelled me to continue when the going got very tough indeed.

The 'thing' was this: I had been employed as a physiotherapist, to treat playing-related injuries in elite young musicians (aged nine to18 years old) at a specialist music boarding school. It became apparent to me that many of the injuries were probably preventable and that the school had no strategy, nor any apparent willingness to develop a strategy, that would reduce the incidence and impact of playing-related injuries amongst its pupils.

Simply put, the willingness to accept the status quo when children were being hurt, the smugness in the prevailing institutional attitude that all was well when it could have been

significantly better, and the apparent acceptance, accompanied by an institutional 'shoulder shrug', that 'these things happen' - when they need not - seemed to me so fundamentally and viscerally wrong that I found myself compelled to do something that would evoke change.

With this sense of outrage and injustice and exasperation as the starting point to this story, the rest of the Prelude continues with an exploration and explanation of my roles as a physiotherapist, educationalist and researcher in the field of performing arts medicine, which have melded so that I am now a living, breathing, researching professional (1.1). It provides details about the school where I work: its mission statement, its organisational structure and its facilities, in order to provide the reader with further details of the setting of this research (1.2). Details are then given about the need for a physiotherapist at the school (1.3), and there is an introduction to the phenomenon of playing-related musculoskeletal disorders at the school (1.4). The Prelude ends by introducing the Doctorate of Education both as a concept, and as a specific programme of study at Cambridge (1.5).

1.1 The Researching Professional

The term 'researching professional' has been defined as a professional who is undertaking a professional doctorate such as an EdD, to enhance the quality of professional learning and to improve professional education more generally (Burnard,et al, in Costley & Fulton, 2018). Burnard describes the researching professional as a hybrid category of those who simultaneously 'do it' and 'study it' (Burnard, Dragovic, Flutter, & Alderton, 2016) and this is precisely what I am doing in this thesis: within the framework of Action Research, this is a 'study of the doing' within the setting of a specialist music school, and also the 'study of the doing' of that research project.

In this section I am going to talk about the multiple roles, numerous identities and professional skill-set which have combined to provide truly unique experiences and insights which undoubtedly have informed, influenced and helped to shape this qualitative work, and which have combined so that I am now a researching professional. Additionally, providing information about my background and experience strengthens the credibility of this study in terms of the trustworthiness framework (see 3.2.6, and Table 3.1).

1.1.1 Professional Physiotherapist.

I am a Chartered physiotherapist with over thirty years of clinical, management and teaching experience. I have treated patients in a wide variety of hospital and outpatient settings in the UK, Australia, Canada and the USA. Since 2008 I have been working with injured instrumental musicians, as an assessing clinician for the British Association of Performing Arts Medicine (BAPAM), and at a specialist school for young musicians. My prior clinical work in the fields of neurology, musculoskeletal out-patients and occupational health have equipped me with key skills of analysing movement and posture, treating musculoskeletal disorders, retraining movement and understanding biomechanics. Additionally, I have insights into, and clinical experience of, the impact of working environments on musculoskeletal health, and have experience and skill applying principles of ergonomics to improve working environments.

My own background as an amateur musician, and first-hand experience with my own musical children provided insight into some of the pressures, demands, frustrations, expectations and joys felt by the pupils and their parents.

Initially my job at the school was for 25 days each year as 'visiting physiotherapist', and my role was to treat playing-related injuries in the pupils, as and when they occurred. From very early in the job, it seemed to me that the playing-related injuries that I was seeing in the pupils were probably preventable, and yet there was no strategy in place to address injury prevention, no attempt at raising awareness about injuries, and no particular or apparent concern about injury, except perhaps when a child's musical progress might be slowed, or when a child might miss playing in a concert. Concern for the welfare of the child as a whole, seemed very much secondary to concern about their ability to make music.

I very much wanted to understand more thoroughly some of the issues around playing-related musculoskeletal injuries, health & wellbeing in elite young musicians. The terms 'health' and 'wellbeing' are often used synonymously, but each has a distinct definition. Health has been defined as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (World Health Organisation, 1948), and although this definition is old, the World Health Organisation has not changed it. Wellbeing is defined as being contented, healthy, or successful (Collins, 2014). Although health and wellbeing influence and impact on each other, they are distinct and separate states. My primary interest is in musculoskeletal health and its effect on wellbeing, and this is the

focus of this thesis. Exploration of mental health and wellbeing are beyond the scope of this thesis.

I was interested in developing and implementing some sort of injury prevention, health promotion and performance wellness programme at the school, but as a visiting staff member, attending less than one day / week over the course of the academic year, my voice within the school was neither loud, nor listened to. It proved impossible to effect any meaningful change from this position, and it was clear to me that a significant change in my role would need to occur before this dynamic could shift.

1.1.2 Professional Educationalist

Between September 1994 and July 2002, I worked as a senior lecturer on a BSc (Hons) Physiotherapy course in the UK. I was involved in designing, developing and delivering several new modules for the course and had a role as a personal tutor, providing pastoral, academic and practical support to students on the course. I obtained a post-graduate certificate in teaching and learning in higher education and then completed a Master of Arts (MA) in teaching and learning in higher education. I returned to clinical work in August 2002, after the arrival of my second child, when juggling work commitments, a long commute to work, and home life became significantly more complex, and I needed to work closer to where I lived.

My background as a senior lecturer on a BSc (Hons) course, and my education-based MA provided the eligibility criteria for me to apply for the EdD. Additionally, working as an educationalist has significantly influenced how I work clinically: I see the education of patients, about their condition, about the cause of their condition and about prevention of recurrence of their condition as fundamental to a successful treatment episode. This has led, quite naturally, to my current stance of seeing the relevance and benefit of health promotion initiatives as educational, and as integral to successful clinical interventions.

1.1.3 Professional Researcher

Since starting the EdD in October 2011, I have been critically examining practice at the school where I work and have become an active researcher. Initially I presented my work at education research conferences, physiotherapy conferences, and performing arts medicine events, but as my work developed, I began strategically targeting my findings specifically at music education platforms, performing arts conferences and instrument teachers CPD events.

I have now presented posters, papers and workshops at national, international and world conferences, and am in demand as a speaker at CPD events in the field of music education, and on residential orchestral courses for young musicians. A full chronological list of related professional activity undertaken since starting the EdD (conference presentations, publications, invitations to talk, teaching sessions etc.) can be found in Appendix A.

1.1.4 Amateur Musician

As a child I learned to play the piano and the classical guitar, and since leaving home at age eighteen, I have joined choirs and participated in choral singing wherever I have lived. I am actively involved in the local music scene, singing in a local choir, playing bass guitar in a local swing band, and playing the double bass in the University of Cambridge Philharmonic Orchestra. Resultantly, many of my friends are musicians, and much of my social life involves music and musicians. My involvement with music has also extended to my children; both have been involved in music making since they were very young. Now teenagers, they are both musically active in a variety of contexts.

My active involvement in music, both personally, and as a parent of young musicians, has undoubtedly been instrumental, for want of a better word, in delivering me to the point of having clinical-eyes open, musical-ears attuned, researcher-curiosity awakened, and parental-concern-for-children heightened. I was (and still am) ideally and uniquely placed to notice, question, probe, think, and - faced with a situation that was clearly wrong - was totally and explicitly unable to accept the orthodoxy. Furthermore, I had (and still have) the passion and energy required to promote the wellbeing of pupils by driving forward this piece of work.

1.2 The Research Setting

In this section I will describe and explain certain features and aspects of the school, to give an overview of its history, its purpose, its organisational structure and its facilities. The intention is to provide the reader with a flavour of the school and a taste of the setting of this work.

The school is the oldest of five specialist music schools in England and Scotland for young musicians who have been identified as 'gifted and talented'. I will define each of these terms based on predominant current international thinking: Giftedness describes an individual whose potential to achieve within one or more aptitude domain (such as mathematics, music,

sport or art) is distinctly above average for their age group. Talent is the term used to describe an individual's level of performance in a particular domain (McPherson & Williamon, 2016).

The school identifies children who are musically gifted and then develops their talent through immersion in a musically enriched environment.

It was established in 1962 and is funded under the government's music and dance scheme (MDS). It is a recognised centre of excellence and in 2003 it was awarded the UNESCO Mozart gold medal in recognition of the contribution it has made to music, education and international culture. The school has about 185 pupils aged between nine and eighteen years old. There is a mixture of overseas and UK students of which, approximately 75 per-cent board at the school and the rest are day pupils. The boarders live in one of four boarding houses, and day pupils are incorporated within the boarding houses during the school day. For the boarders there is no travel time to and from school and this time is used for additional instrument practise.

The school is extremely successful at developing the musical talent of its pupils. This is measurable by the numbers that progress to specialist music higher-education establishments (colleges, universities and conservatoires) all over the world and the success of its pupils in national and international competitions. The consistent success of the pupils is multi-factoral: the pupils are selected to enter the school after a stringent audition process and once attending the school, pupils are immersed in a musically enriched environment. Individualised timetables are designed for each pupil to maximise the practise time available.

At the time of writing, the academic timetable at the school ran from 9.00am until 5.20pm, but to enable pupils to fully participate in the numerous musical activities available, older day pupils (school years nine to 13) were required to be in school between 8.00am and 6.00pm, and younger day pupils (between school years five and eight) were required to be in school between 8.00am and 4.00pm. Each day between 4.00pm and 6.00pm there was a timetabled session called 'music block' which contains orchestral, chamber music and band rehearsals, masterclasses and improvisation sessions throughout the week.

The school provides a particular combination of circumstances and a specifically designed timetable that allows for a significant amount of practise and rehearsal time each day. There are plenty of designated practise rooms, available from early morning practise at 7.20am, throughout the day until as late as 10.20pm. Three music graduates are employed by

the school to work specifically in a combined role of boarding house staff and practise supervisors.

Each pupil has three individual instrumental lessons each week, usually two lessons of two hours duration with their first study instrument teacher and one hour with their second study instrument teacher. These, and individual theory lessons, are timetabled throughout the week, and instrument and theory lessons are prioritised above other aspects of the general curriculum. The instrumental teachers who work at the school are world class: most have a portfolio career combining teaching (most at conservatoires in London) and performing. It is not uncommon for pupils to progress from the school to conservatoire and continue studying with the same teacher.

The strength and depth of the relationship between pupil and teacher is known to be significant in shaping the development of young musicians, and this will be discussed in greater depth in the literature review (2.2.6). The role of the instrumental teachers is a key feature of this thesis will be examined in more depth later in sections 4.6.1, 4.7.6, 5.4.1 and 7.4.5.

1.2.1 Facilities

The school moved to its current site in 1997. The site had previously also been used by a boarding school, and so boarding accommodation was already here. The main school building contains the headmasters office, the administration office, the concerts office, the dining hall, the majority of the subject teaching classrooms, the school library (which houses an extensive collection of music and academic-subject textbooks, but no fiction for leisure-purpose reading), an information-technology room, the staff room, a sports hall with changing rooms, and a large concert hall with a stage. This hall is used for assemblies, orchestra and band rehearsals, drama productions, and concerts. The main building also includes one of the four boarding houses. There are three other boarding houses elsewhere on the site. All four boarding houses are either newly built (completed in 2010) or have been refurbished since 2010.

There is a new music block which opened in 2007, containing practise rooms, instrumental teaching rooms, class-teaching rooms, a music technology lab and a 'state-of-the-art' recital hall with superb acoustics. A number of old out-buildings and de-mountable classrooms are used for teaching art, science, history, and the junior pupils. Other buildings

are used by the school nurse, physiotherapist and counsellor, in the school medical centre and by the maintenance department and the housekeeping staff.

The sports facilities are inadequate. The sports hall is extremely run-down and in need of major refurbishment. It has a hard concrete floor, the roof leaks, the plaster and paint are falling from the walls and it has no heating. There is an additional small outside hard-court, the size of one tennis court, which is poorly maintained and becomes slippery when it is damp or wet, and there is a large playing field with a 200 metre running track, a rounders' pitch and a football pitch. There is no designated playground, nor play equipment such as climbing frames, for the pupils. These poor facilities contribute to a certain resistance or reluctance amongst many of the pupils to participate in physical activity. This attitude was widespread at the time this study started, and impacted negatively on the musculoskeletal health and cardiovascular fitness of the pupils. Compounding this, the school campus is not large and pupils do not get much physical activity just by moving around the school.

Throughout the school are a large number of individual instrument practice rooms, most with a piano and many with a large mirror. All the sixth form pupils have individual bedrooms, and each pianist in the sixth form has a piano in their room. This means that most of the designated practice rooms are used throughout the day by younger pupils in school years five to 11 (aged nine to 16).

The School has a medical centre on-site. This is staffed by the specialist school nurse who works full time, providing care between 8.30am - 5.00pm, Monday to Friday. In reality she works significantly longer hours than this. The medical centre contains the nurses consulting room, a physiotherapy treatment room, a room used by the school counsellor, a spacious, pleasant waiting area, where posters and leaflets are displayed and two bedrooms, each with en-suite shower and toilet, where ill pupils can rest. The school nurse is supported in her care of boarding pupils by the boarding house staff.

In summary, the facilities at the school are a total and honest reflection on the current, priorities: in addition to the classrooms and admin rooms, there is a recital room, a concert hall and many practise rooms. However, facilities for helping pupils to maintain good levels of physical fitness, and to engage in physically active 'play' are both extremely limited and poorly maintained. It is all part of the picture whereby the sheer physical demands of playing a musical instrument are somehow disregarded.

1.2.2 Leadership and Management Organisational Structure of the School

The school has experienced a protracted period of management turbulence, following a rapid turnover of a succession of nine head-teachers or acting head-teachers between 2005 and 2018. The popular, long-serving and respected director of music left the school in the summer of 2013, having worked at the school since 1988 and in post since 2001. He was not replaced, and the work of director of music was absorbed by the three music heads of departments (head of strings, head of keyboards and head of woodwind, brass, percussion and voice).

With full support of the board of governors, the new head-teacher, appointed from September 2012, made sweeping changes to the personnel and roles of his senior management team with the formation of two new deputy head-teacher roles, from September 2013: deputy-head (staff and communications) and deputy-head (students and innovation). A large number of new initiatives were implemented, involving closer monitoring of pupil performance, behaviour, attitudes, attendance and punctuality. The head who had introduced the two new deputy-head positions to his leadership team and saw the demise of the post of head of music left the school in July 2015.

Between September 2015 and December 2015, the deputy-head (staff and communications) acted as head-teacher until a new head was appointed and took up role in January 2016. In December 2017 this head left the school. An interim head was appointed for January 2018 and looked after the school until another permanent head (now with the title 'Principal' was appointed and started in September 2018. The senior management team currently comprises the Principal, the two Deputy Principals, and the school bursar. Having two deputy principal roles, serves the dual function of distributing the management workload and also clearly identifying a named person with distinct responsibilities. This has provided clear channels of communication for the staff and has devolved responsibilities that were previously undertaken by the head teacher.

One of the results of the frequent changes in personnel in the headship and senior management team, and the introduction of new ways of working, has been a feeling of insecurity, vulnerability and uncertainty amongst some staff members. This has provided additional resistance to the already difficult and complex process of introducing change. Changes that I set out to introduce during this research were yet more change during a period

of rapid transition, and at a time when staff may have felt particularly vulnerable and resistant to yet more change.

In September 2015, the new post of head of woodwind, was created to unload some of the work from the head of brass, voice, percussion and woodwind. There is also a head of composition, and a head of jazz, bringing the number of music heads of department (HODs) to six.

Music is centrally located within the management and organisational structure of the school and this is entirely appropriate for such a school. But there is, at times, a palpable divide between the academic aspect of the school and the musical aspect of the school. Tensions exist between these two distinct strands, particularly when there are competing demands on pupil time, such as when they are preparing for public exams such as GCSEs and A levels. It is another example of how the child as a 'whole' can be diminished somehow, amidst the significant demands of musical development.

The current management and organisational structure of the school, which was introduced in September 2013, is illustrated in Figure 1.2. In this diagram, the music is located centrally, with the academic aspect positioned to one side and the pastoral and physical support (i.e. nurse, counsellor, physiotherapist) to the other. This layout is accurately representative of the current school structure.

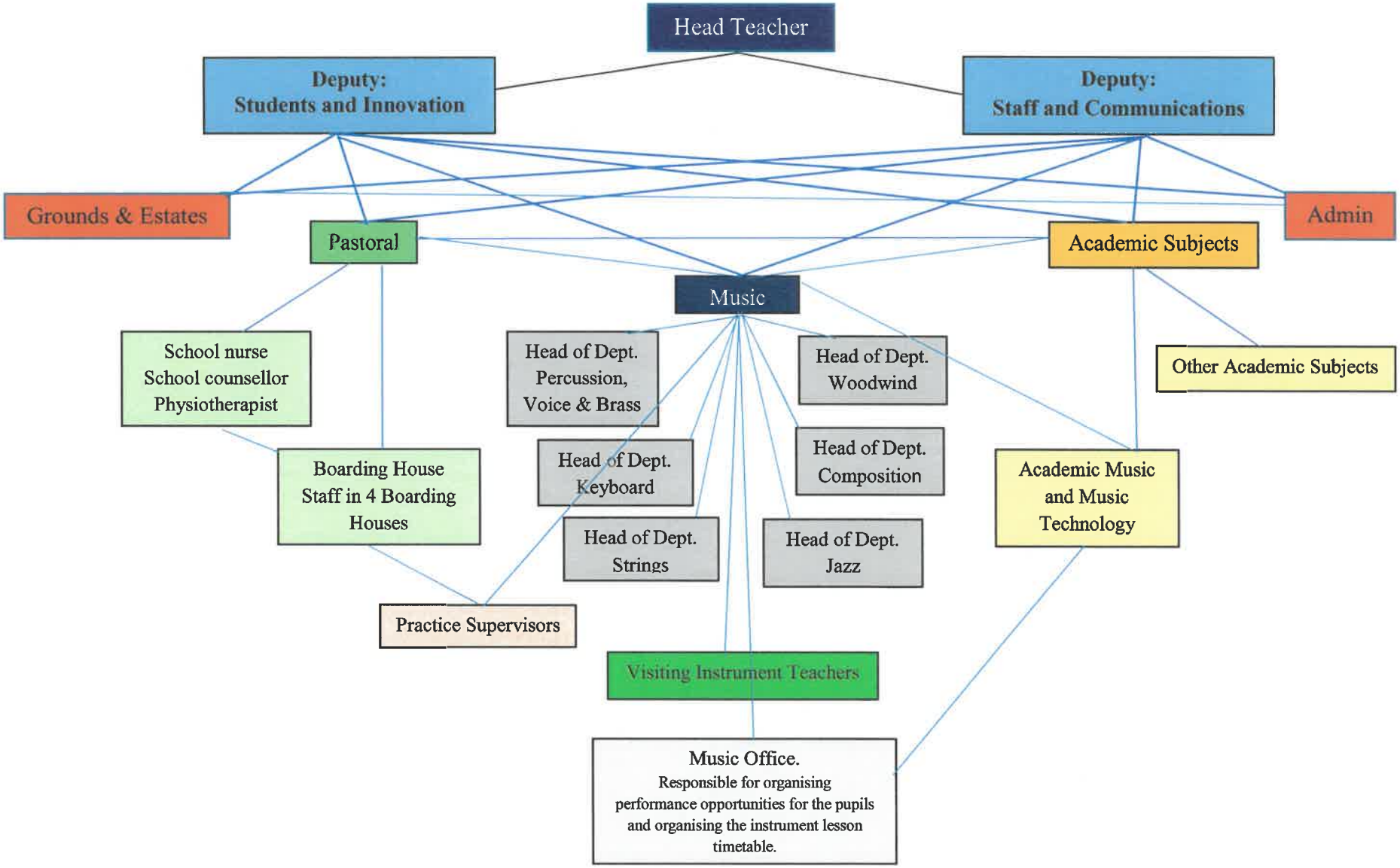


Figure 1.2 Management and Organisational Structure of the School from September 2013

1.2.3 Mission Statement

In common with other schools and comparable institutions, the school has a mission statement which is shown in Text Box 1.

"The [redacted] School exists to provide young musicians of exceptional promise with the best possible teaching and environment in which to fulfil their potential, irrespective of their background.

We believe it is essential for all our young musicians to

- Develop an appreciation of personal integrity and a spiritual dimension to life;
- Benefit from stimulating association with similarly gifted children, and opportunities for practising, performing and developing musicianship in a supportive context;
- Grow in self-confidence, accept their responsibility to the world community whatever career they follow, and develop an appreciation of the obligation to out and share their talent with others;
- Achieve levels of musical and academic achievement, personal security, adaptability and satisfaction that will sustain them throughout their lives."

Text Box 1 School Mission Statement

The Mission Statement has been included because despite the schools proven record of enabling pupils to perform musically to an exceptionally high standard, at the time that I began this thesis, they were not employing current, evidence-based best practise in their approach to playing-related injury prevention in the young musicians in their care, and so were falling short of their stated intention to provide the best possible teaching and environment for young musicians.

This was evidenced by the high incidence of preventable playing-related musculoskeletal disorders being seen (4.1.1, 4.7.5.2, 4.7.9.5), and also in the lack of awareness of risk factors for playing-related injuries amongst key stakeholder groups involved in the study (4.7.5.1, 4.7.9.1). It highlights that when I began working at the school and subsequently embarked on this study, school policies and procedures were NOT in fact providing pupils with the best possible environment in which to fulfil their potential.

This was not the result of any malicious intention but was the consequence of an absence of knowledge and understanding of current research findings about playing-related musculoskeletal disorders and a lack of use of evidence-based best practice in educating young musicians There is a strong tradition within classical music education of perpetuating the status quo, to continue to do what has been done before. This flags up, with bright 'day-

glow' orange, cannot-be-missed, banner sized flags, that a significant change is needed at the school.

1.2.4 Stakeholders

In this section I am going to introduce the term 'stakeholder' and identify who the key stakeholders are in this project. The term 'stakeholder' has emerged from the field of business management and was first used in 1963 in an internal memorandum at the Stamford Business Institute. It described stakeholders as 'those groups without whose support the organization would cease to exist'. In subsequent decades stakeholder theory has been developed and championed by R. E. Freeman (Freeman & Reed, 1983), and today there are many more definitions of 'stakeholders' which all have roots in the original definition developed by Freeman in 1984:

> "Any group or individual who can affect or is effected by the achievement of the organization's objectives," (Freeman, 1984, p.3)

It is with due consideration of this definition that the central component of the schools' mission statement must be explored in relation to those who can affect, or who are effected by, the statement:

> "The School exists to provide young musicians of exceptional promise with the best possible teaching and environment in which to fulfil their potential, irrespective of their background"

The stakeholders are therefore, the pupils and their parents, the Heads of the Music Departments, the visiting instrument teachers, the practice supervisors and the staff in the music office, the boarding house staff, and medical centre staff. the academic staff, the school administrative staff and the grounds & estates staff. Of these, some who have greater effect, or who are affected more, are considered to be key stakeholders. Key stakeholders can be identified by the application of five questions:

1. Does the stakeholder have a fundamental impact on your organization's performance? (Required response: yes.)

2. Can you clearly identify what you want from the stakeholder? (Required response: yes.)

3. Is the relationship dynamic — that is, do you want it to grow? (Required response: yes.)

4. Can you exist without or easily replace the stakeholder?
   (Required response: no.)

5. Has the stakeholder already been identified through another relationship?
   (Required response: no.)

(Kenny, 2104, pp.1-2)

The key stakeholders for this thesis have been identified using the five questions, which have been slightly modified to reflect the yes/no response in direct relationship to this thesis. This is shown in Table 1.1.

Table 1.1 Identification of Key Stakeholders using Kenny's Five Questions.

Question	Response yes	Response no
1. Does the stakeholder have a fundamental impact on this thesis?	Pupils, Parents HODs, practice supervisors, visiting instrument teachers, Boarding House Staff, School Nurse,	Music Office Staff, Academic Staff, School Admin Staff, Grounds & Estates Staff,
2. Can you clearly identify what you want from the stakeholder?	Pupils, Parents, HODs, practice supervisors, visiting instrument teachers, Boarding House Staff, School Nurse	Music Office Staff, Academic Staff, School Admin Staff, Grounds & Estates Staff,
3. Is the relationship dynamic — that is, do you want it to grow?	Pupils, Parents, HODs, practice supervisors, visiting instrument teachers, Boarding House Staff, School Nurse, Academic Staff	Music Office Staff, School Admin Staff, Grounds & Estates Staff,
4. Can this thesis exist without or easily replace the stakeholder?	Music Office Staff, Academic Staff, School Admin Staff, Grounds & Estates Staff,	Pupils, Parents, HODs, practise Supervisors, visiting instrument teachers, Boarding House Staff, School Nurse,
5. Has the stakeholder already been identified through another relationship?	Pupils, Parents, HODs, Practice Supervisors, Visiting Instrument teachers, Boarding House Staff, School Nurse, Music Office Staff, Academic Staff, School Admin Staff, Grounds & Estates Staff,	

In summary, the key stakeholders in relation to this thesis emerge as the pupils, and those with direct influence on, or input into, their musical development or their physical care: the heads of the music departments, the visiting instrument teachers, the practice supervisors, the boarding house staff, the parents, the school nurse and me. It is these key stakeholders, as those with the most significant effect on, or those most significantly affected by this thesis, this who will need to be the focus of any intervention.

1.2.5 Relevant Policies

The school operates using a series of policies which are designed to ensure that there is consistency in the day to day running of the school, and to act as guidance in less usual circumstance.

The Policies used by the school are organised under the following five headings: academic policies (covering such areas as the curriculum, assessments & reporting, homework, learning support & special educational needs), general policies (such as equality and data protection), health, safety and welfare policies (including health & safety, educational visits, and positive mental health), administrative policies (ICT acceptable use policy, complaints policy, whistle-blowing, admissions, and external music lessons) and pastoral policies (including policies on child protection, anti-bullying, self-harm, behaviour & sanctions, boarding - principles and practice, school rules, student cars and drugs & alcohol).

The health, safety & welfare policies and the pastoral policies are flagged up for particular attention because later in this thesis I will explain how these were changed as a direct result of this research (5.2.2, 5.4.2, 5.4.2.3, 7.4.2).

1.3 The Case for a Physiotherapist at the School

In this section I am going to provide background information about why a physiotherapist role was created at the school.

In 2004, the health promotion in schools of music project was established under the direction of the Performing Arts Medicine Association (PAMA), more information about PAMA is provided in section 2.2.1. In September 2006 it published a number of declarations and recommendations for action (Chesky, Dawson, & Manchester, 2006).

The declaration and recommendations were aimed very much at conservatoires and amongst the declarations is the statement that 'performance injuries are preventable', along with the recommendation that a health promotion framework be adopted by educational establishments who are training musicians. In July 2007 a document titled 'Common principles emerging as good practice in the prevention of strain injuries in specialist music/dance schools and conservatoires' (see Appendix B) emerged from presentations and discussions at the annual international PAMA conference in Colorado. One of these principles is that there should be rapid access to physiotherapy.

An oboe professor at the Royal Academy of Music, who also teaches at the school had been a delegate at that conference and in September 2007, she used this recommendation to support the case for employing a physiotherapist within the School. The job was duly advertised in the jobs section of the Chartered Society of Physiotherapy (CSP) magazine in August 2008 and following a successful application and interview process, I began working

as the visiting physiotherapist to the school in October 2008, providing pupils with rapid access to assessment and treatment as per the recommendation. Initially, this seemed like a very progressive appointment: and at that point, I was the only physiotherapist employed within a specialist music school anywhere in the UK. But this thesis is based upon the entirely unsatisfactory position of merely treating preventable injuries. The moral imperative to work towards injury prevention and health promotion has driven this work.

1.4 Playing-related Musculoskeletal Disorders at the School

In this section I will define the term playing-related musculoskeletal disorders, and then describe the playing-related musculoskeletal disorders that I found at the school, before in the final section of this chapter, introducing why I decided to undertake the EdD.

1.4.1 Definition of playing-related musculoskeletal disorders

Playing-related pain, playing-related musculoskeletal injury, playing-related musculoskeletal disorder and playing-related musculoskeletal problems are terms that are frequently used interchangeably both in the literature and clinically. However, the term 'playing-related musculoskeletal disorders' was first operationally defined by (Zaza & Farewell, 1997) if musicians answered affirmatively to the question "Currently, do you have a playing-related musculoskeletal problem, i.e., any pain, weakness, numbness, tingling, or other symptoms, that interfere with your ability to play your instrument at the level you are accustomed to?". This definition provides a clear understanding of the extent and impact of the problem, and this is the term that I will be using throughout the thesis.

Detailed findings, discourse and commentary from the literature about incidence, causes and risk factors of playing-related musculoskeletal disorders will be discussed in sections 2.2.2 and 2.2.3.

1.4.2 Playing-related musculoskeletal disorders at the school

Once working at the school I began treating playing-related musculoskeletal disorders and became acutely and uncomfortably aware that many of the injuries that I was seeing in the pupils seemed preventable. They were a mixture of disorders triggered, in simplistic terms, by doing too much (overuse) or were posture or stress related. Injuries ranged in severity quite literally, from inconvenient to career-ending, and I felt a strong moral imperative and an ethical and professional responsibility to try and work towards preventing

preventable injuries, with the intention of reducing the incidence of playing-related injuries that I was seeing in the pupils. However, as a visiting physiotherapist attending the school 25 days/year, I had very little voice at the school: the incidence of injuries remained high and I was having no effective, measurable impact on injury prevention. I felt powerless, and this was increasingly frustrating. I was unsure what to do but was looking for and thinking about possible solutions. In January 2011, I had a meeting with the lead research physiotherapist at the University of Hertfordshire, about the possibility of some sort of collaborative research on the cohort of pupils at the school. She suggested that a professional doctorate could be an effective vehicle to make an impact at the school, and I began exploring the possibility of embarking on a professional doctorate, eventually successfully applying for a place on the Cambridge Doctorate of Education. Background information about EdDs in general, and the Cambridge EdD specifically, is provided in 1.5.

Once I started the EdD in October 2011. I undertook an audit of physiotherapy records (taken between October 2008 and December 2011) which provided detailed information about the nature and extent of the injuries. The results of this audit are presented and discussed in section 4.1.1. The causes of playing-related musculoskeletal disorders that I was seeing concurred with findings in an extensive body of literature which will be explored and examined in section 2.2.3.

The types of musculoskeletal disorders that I was seeing at the school and examples of each are shown in Table 1.2.

Table 1.2 Types and Examples of Playing-related Musculoskeletal Disorders seen at the School (October 2008 - December 2011)

Type of Disorder	**Specific Example**
Posture	Violinists: Elevating left shoulder girdle and flexing neck to left side
Overuse	• Increase in playing time in preparation for an exam, assessment or competition • Participating in an orchestral course • Learning new repertoire with different physical demands (i.e. pianist playing larger chords than they are used to) • Multiple repetitions of a particular passage during a lesson or practice • Change to a larger instrument
Stress	• Preparing for exams such as GCSEs • Anxiety preparing for specific event such as a masterclass, recital, audition or competition • Stress from family/relationship/friendship difficulties

These are real examples of children being hurt, and the intention of exposing at this point in the story the types and examples of playing-related musculoskeletal disorders seen at the school (explored in depth in section 4.1.1), and highlighting that this concurs with findings from the literature (2.2.3), is to share with the reader my deep discomfort and concern that I was working in a situation where something was fundamentally very wrong.

1.5 The Doctorate of Education (EdD)

'The PhD is to understand the world. The Professional Doctorate is to change the world'

(University of Cambridge, Faculty of Education, 2018).

In this section I am going to talk about the background to, and history of, professional doctorates in general and about the Doctorate of Education (EdD) specifically, and explain my choice of an EdD as a means to try and initiate a change at work.

The EdD is one of the group of Doctorates known as professional doctorates that have emerged from within professions such as engineering (EngD), Business (DBA), Medicine (MD), Clinical Psychology (DClinPsy) and Education (EdD). The major difference between a more traditional PhD and a professional doctorate is that the PhD aims to create and pursue new and original knowledge in the researchers specific academic field, while the professional doctorate aims to develop professional knowledge that will enhance professional practice (Burgess, Sieminski, & Arthur, 2006). One of the distinctive characteristic of professional doctorates is that 'practice' is a central focus and acts to drive change (Burnard et al., 2016).

Many students decide to do an EdD rather than a PhD because they have a curiosity and interest about something within their own work that they wish to explore in depth, or because, like me, they have observed something about local practice that they wish to change (Burgess et al., 2006).

The very first EdD began in 1920 at Harvard University (Macintyre & Wunder, 2012). The University of Cambridge EdD is comparatively young, with its first cohort starting in 2011. The Faculty of Education website states that their Doctorate of Education

> 'is aimed at educational professionals, including teachers, school leaders and those in related fields (e.g. policy, support or management), who are committed to extending their understanding and improving practice. Through their research students seek to

> generate, develop and disseminate professional knowledge and support innovation that will have social and educational impact.'
>
> (University of Cambridge, Faculty of Education, 2018).

With an education-based MA, my work being situated within a school, and my intention of attempting transformative change, I looked at EdD programmes, rather than PhD programmes, at a number of Universities with the specific intention of using an EdD as a vehicle with which to promote change. In the spring of 2011, I successfully applied for a place in the first cohort of students on the Cambridge EdD. I was attracted to this particular programme because it had been designed

> "in order to generate, develop and disseminate professional knowledge and support innovation that will have social and educational impact.....

And was aimed at

> "Applicants will be experienced educational professionals.....who are committed to extending their understanding and improving practice"
>
> (University of Cambridge, Faculty of Education, 2016).

This promised to be a good fit with what I was wanting to attempt at the school: namely, extend my own and other stakeholders understanding of the issues around playing-related musculoskeletal disorders in young musicians, improve practice in the field of educating young musicians in order to reduce the incidence of such injuries, and broadly disseminate the most current, evidence-based knowledge about this topic.

Despite its relative youth as a programme, the Cambridge EdD has attracted a group of doctoral students drawn from diverse disciplines including education, business, veterinary science, physiotherapy and counselling (Burnard et al., 2016), and the willingness of the Cambridge EdD to accept students who are not, in the most traditionally sense, 'teachers' but who are nonetheless educationalists makes for a vibrant, supportive and diverse student community. The communities provided by my own EdD cohort and EdD research group, along with regular contact with EdD staff and my supervisor, provided regular peer scrutiny of the project. This peer scrutiny supports the credibility of the project in terms of the trustworthiness framework (see section 3.2.6 and Table 3.1).

Burnard notes that during the transformative process of undertaking an EdD 'researching professionals become critically reflexive researchers who are asking work-based

and work-place questions' (Burnard et al., 2016 p.18). For me, the transformative process of the EdD, led to a fairly consistent state of, for want of a better description, me being 'EdD alert'. This enabled me to notice, reflect and act on apparently inconsequential conversations, comments, thoughts or ideas, and integrate them within 'EdD thinking' such that they became 'lightbulb moments' in this research (5.1.4 and 5.1.5).

1.6 Summary

In section One, the Prelude to the thesis, I introduced myself to the reader and have positioned myself as a field-crossing researching professional (1.1): a hybrid physiotherapy practitioner / educationalist / researcher / parent / musician (pp3-6). I introduced the school (1.2 pp6-15) and justified the employment of a physiotherapist on the staff to treat playing-related musculoskeletal disorders in the pupils (1.3 p16). I talked about my initial experience assessing and treating these injuries and how they seemed to be preventable, and this realisation changed the desire to try and change certain processes, policies, systems or behaviours within the school, to a moral imperative.

My familiarity with the culture (p6) and setting of the research (pp6-15), supports the credibility of the project, while the detailed description of the school and of the phenomenon of playing-related musculoskeletal injuries, strengthens the transferability of the project in terms of the trustworthiness framework (see section 3.2.6 and Table 3.1).

The final section (1.5) compares PhDs with professional doctorates, and introduces the EdD, illustrating how it is designed to enhance professional knowledge and how it can be used to bring about change in professional practice through creation of new knowledge and understanding. It is these features that led me to apply for and enrol on the Cambridge EdD, in a direct attempt to address the issue of the high incidence of preventable playing-related musculoskeletal disorders that I was treating (p17).

SECTION TWO - Exposition

Comprising Chapters Two and Three

In which literatures are reviewed,
and the methodology and method are explored and justified,

Chapter Two - Review of Literatures

2.1 Introduction and Design

The field of performing arts medicine is a relatively recent one, and with two notable exceptions dating from1713 and 1887, the literatures that I have used reflect this, and were written between 1985 and 2017. I have explored literature from the fields of Performing Arts Medicine, Occupational Health, Ergonomics, Physical Education, Educational Leadership, Physiotherapy and Music Psychology.

This literature review is presented in distinct sections that represent eight key topics informing the background to this project. The sections and topics are:

- Performing Arts Medicine (2.2.1 pp23-25).
- The incidence of Playing-related Disorders in Orchestral Musicians and Conservatoire Students (2.2.2 pp25-28)
- Causes of and Risk Factors for Playing-related Disorders in Orchestral Musicians and Conservatoire Students (2.2.3 pp28-37)
- Health Promotion for Musicians (2.2.4 pp37-39)
- Young Musicians (2.2.5 pp39-44)
- The Role of the Instrument Teacher (2.2.6 pp44-48)
- Other Stakeholders (2.2.7 p48-48)
- The Case for a Preventative Curriculum at a Specialist Music School (2.2.8 pp49-52).

2.2 Performing Arts Medicine, Playing-related Musculoskeletal Disorders and Multiple Stakeholders

In this section I will be exploring and critically reviewing literature that has looked at aspects of performing arts medicine related to playing-related musculoskeletal disorders in professional instrumental musicians, in conservatoire level instrumental musicians and in younger musicians. I will examine the literature that has looked at incidence, causes of, and risk factors for such injuries. I will then look at aspects of pedagogical relationships in instrument teaching and at literature which explores the of the role of the instrument teacher, and the significance of the relationship between the pupil and the instrument teacher. Finally, I will consider the potential benefits of introducing a preventative curriculum in a specialist music school for pre-conservatoire age young musicians.

2.2.1 Performing Arts Medicine

Performing arts medicine is the specialist field of occupational medicine that addresses the specific issues of performing artists in their work place and also in their preparation for work: in rehearsals, in lessons, and while practising. In this section I am providing an overview of the history of performing arts medicine, from its earliest recorded origins in 1713 to the most current empirical research in 2017.

The idea that tradesmen, including musicians, developed occupation-specific medical complaints was first conceived by Bernardino Ramazzini in 1713. Ramazzini was a physician and a professor at the university of Padua, Italy. His early work focused on the diagnosis and treatment of malaria, but his clinical interests and work turned towards what is now known as 'occupational health' when he hired some workmen to clean out the cesspit at his home and noticed that one of them became overwhelmed by the fumes. He realised the causal link between the presence of noxious fumes, and the subsequent collapse of one of the workmen. This observation served as a launch-pad for him to study fifty-two different occupational groups of workers, including miners, farmers, scribes, and musicians.

He described the medical ailments common to each group and developed the idea that to consider and understand what each patient does for a living gives a clearer picture of what may be wrong. Bernardo Ramazzini published '*De Mortis Artificum Diatriba*' in 1713 (commonly translated as 'diseases of tradesmen' or 'diseases of workers'). This first ever book of occupational diseases outlined the health hazards now commonly associated with dust, chemicals, fumes, violent movements, repetitive movement and postures or positions

that adversely load muscles, ligaments, joints and neural structures (Ramazzini & Wright, 1983). Performing artists including (but not limited to) musicians, dancers and actors are often exposed to a wide range of these hazards and can develop a variety of medical disorders and ailments as a direct consequence of exposure to the hazards. The entire field of performing arts medicine has evolved to treat performing artists with these disorders or ailments.

William Dawson carried out a bibliographic retrospective of early performing arts medicine literature and found that performing arts medicine emerged as a distinct clinical speciality of occupational medicine as recently as 1985 (Dawson, 2013).

As a sub-speciality of occupational medicine its broad aims are to keep employees healthy and safe whilst in work and to manage risks in the workplace that are likely to give rise to work-related ill health.

Occupational health focuses on achieving three different but linked objectives:

i) The maintenance and promotion of workers' health and working capacity

ii) The improvement of working conditions

iii) The development of work organisations and working cultures in a direction that supports health and safety at work.

Performing arts medicine practitioners seek to apply these three objectives to performing artists and to their working environment and culture. Globally, there are three notable organisations that act to coordinate these efforts:

The Performing Arts Medicine Association (PAMA) is based in the USA and provides a central 'hub' which publishes the journal 'Medical Problems of Performing Artists' and organises the annual medical problems of performing artists conference and symposium (usually) in Aspen, Colorado.

The British Association of Performing Arts Medicine (BAPAM) evolved originally from a rheumatology clinic at the Royal Free Hospital, London. In 1984 it started treating musicians. Now it co-ordinates a number of clinics across the UK for ill and injured performing artists, providing fast-track access to a variety of clinicians with expertise in treating performing artists. BAPAM supports musicians, teachers and clinicians, and is a valuable source of information. BAPAM has strong links with the only performing arts medicine MSc programme in the UK, which is a collaborative project

between BAPAM, The Royal College of Music (RCM), Trinity Laban Conservatoire of Music and Dance and University College, London (UCL).

The Australian Society for Performing Arts Healthcare (ASPAH) was founded in 2006 and its mission statement declares that 'ASPAH recognizes that all performing artists, young and old, amateur and professional, have unique needs that may not be met by standard models of healthcare'. The shift from 'performing arts medicine' to 'performing arts healthcare' is a subtle but important one, as it 'de-medicalizes' and promotes the idea of performers health and wellbeing.

In summary, the causal link between the hazards that an employee is exposed to in the course of his work, and the impact on his health or wellbeing was first identified in 1713 by Ramazzini. This formed the basis for what has become the clinical field of occupational health. Performing arts medicine and performing arts healthcare have emerged as distinct clinical sub-specialities of occupational health as recently as 1985 (Dawson, 2013). Today, performing arts medicine practitioners look after dancers, musicians, actors and circus skills performers, seeking to maintain and promote their health and working capacity, improve their working conditions and develop organisations and working cultures in a direction that supports health and safety at work. Performing arts medicine practitioners have a global network of organisations that support and coordinate these efforts and encourage research to generate new knowledge and provide an evidence base to support best practice in the treatment of performing artists.

My involvement in performing arts medicine is predominantly in the assessment and treatment of injured instrumental musicians. I have specific experience and have developed particular expertise in treating young instrumental musicians and feel an acute need to actively work towards injury prevention and health promotion in this specific sub-group of performing artists.

2.2.2 Incidence of Playing-related Musculoskeletal Disorders in Orchestral Musicians and Conservatoire Students

In this section, through use of a table, I will look at the significant body of literature about the incidence of playing-related musculoskeletal disorders in professional orchestral musicians and in students at music conservatoires.

During the mid-nineteenth century composers such as Beethoven, Chopin, Tchaikovsky and Brahms were producing increasingly technically demanding work which was increasingly more physically challenging to play. Tchaikovskys' violin concerto is now

considered to be standard repertoire for elite players, but in their 1998 article which describes a theoretical framework to explain expert performance, Ericsson, et al., reflect that when Tchaikovsky composed his violin concerto in 1878, elite players refused to play it, claiming it was 'unplayable' (Ericsson, Krampe, & Tesch-Romer, 1993).
newer repertoire, causal links to new physical ailments were seen, including (probably) the first documented case studies of focal dystonia, described as 'muscle cramping in pianists hands' written up and published in the British Medical Journal (Poore, 1887).

A large amount of more recent literature indicates that the majority of professional symphony orchestra players and conservatoire level instrumental students have experienced one or more playing-related condition. Identifying whether pain is related to playing or to other factors, has been elegantly simplified by (Zaza, Charles, & Muszynski, 1999), in their Canadian-based study which used a semi-structured interview format to collect data from 30 classical musicians and conservatoire level music students to look at the meaning of performance-related musculoskeletal disorders to classical musicians. They developed a single question, the answer to which reveals whether, or not a musician has a playing-related musculoskeletal disorder (PRMD). This question is shown in Text Box 2.

> Do you have pain, weakness, numbness, tingling, lack of control or other symptoms that *interfere* with your ability to play your instrument at the level you are accustomed to?
>
> (Zaza, Charles, & Muszynski, 1999).

Text Box 2. Question which identifies a playing-related musculoskeletal disorder.

Data gathered from participants in the study provided a description of the characteristics of Playing-related Musculoskeletal Disorders compared with 'normal' aches and pains and this is illustrated in Figure 2.1.

Figure 2.1 Characteristics of Playing-related Musculoskeletal Disorders compared with 'normal' aches and pains.

Across the literature incidence of playing-related musculoskeletal disorders (either current or historic) is reported as ranging from 26 per-cent to 93 per-cent. The wide differences in incidence appears to depend on the definition of exactly what a playing-related injury is, on the variety of methods used to collect the data, and on the response rate to the wide number of surveys used (Guptill, 2011). This literature is summarised in Table 2.1.

Table 2.1 Literature summarising reported incidence of playing-related musculoskeletal in disorders professional orchestral players, conservatoire students and young instrumentalists

Author(s)	Date	Design of Study	% reporting Playing-related Disorder
Christine Zaza	1998	Systematic review of incidence and prevalence	Btw 26% & 93%
Heidi Blackie, Ronald Stone, & Anne Tiernan,	1999	Descriptive Study	93%
Christine Guptill, Christine Zaza, & Stanley Paul	2000	client-centred, occupation-based survey to Music Students in a large US University	87.7%
Bronwen Ackermann & Roger Adams	2003	Survey of Professional Orchestral Violinists in Australia	88%
Kaneko, Lianza, & Dawson,	2005	Questionnaire to members of six major symphony orchestras in Sao Paulo, Brazil.	65 %
Abreu-Ramos & Micheo,	2007	Questionnaire to Puerto Rico Symphony Orchestra	81.3%
Ranelli, Straker, & Smith,	2008	Cross sectional Questionnaire Study of Children learning musical instruments in Western Australia	67%
Brandfonbrener,	2009	Survey, using a questionnaire	79%
Zander, Spahn, & Voltmer,	2010	Longitudinal Observational Study	"very high"
Tim Driscoll, Bronwen Ackermann & Dianna Kenny	2011	Questionnaire and Physical examination of professional orchestral musicians	84%

Table 2.1 Continued Ranelli, Straker, & Smith,	2011	Survey of Children aged 7-17 learning musical instruments in Western Australia	67%
Bronwen Ackermann, Tim Driscoll, & Dianna Kenny	2012	Questionnaire to members of eight full time professional Orchestras in Australia	84%
Kenny & Ackermann,	2015	Cross Sectional Survey of 337 Professional Orchestral Musicians	84%
Stefano Vinci, Anne Smith, & Sonia Ranelli	2015	Survey of 76 string players from Western Australian Youth orchestras	73.5%
Patrice Berque & Heather Gray,	2016	Questionnaire to Professional Orchestral Players in Scotland	77.2 %

It is known that playing-related musculoskeletal disorders in musicians range in severity from inconvenient to career ending (Culf, 1998; Zaza, 1998). In what is now the fourth decade of performing arts medicine, the research focus has remained predominantly on establishing the incidence of these injuries (Table 2.1), or studying the biomechanical elements of playing-related disorders (Guptill, 2011; Manchester, 2006). There is a significant body of work that has established the risk factors for, and the causes of playing-related musculoskeletal disorders and this will be explored in section 2.2.3 but Rickert, Barrett, & Ackermann (2013) point out that leading commentators have noted how little has yet been offered in terms of guidance towards injury prevention.

In summary, section 2.2.2 has explored the literature which details the high incidence of playing-related musculoskeletal problems in professional orchestral players, conservatoire level students and younger instrument students. The two most significant and influential points from this section are that the incidence of playing-related injuries is consistently high, and that the research to date has focussed on the biomechanical aspects of why injuries occur. There is a paucity of literature about implementation of injury prevention strategies, and I have not found any literature that refers directly to injury prevention for pre-conservatoire level instrument students within a specialist music school. There is a clear gap in the literature about injury prevention or reducing the incidence of playing-related injuries in pre-conservatoire age young musicians and this directs us towards a potential research question.

2.2.3 Causes of and Risk Factors for Playing-related Musculoskeletal Disorders in Orchestral Musicians and Conservatoire Students.

It is widely acknowledged that instrumental musicians place extremely high demands upon their bodies, comparable with elite dancers or athletes (Watson, 2009). Significantly however, unlike elite dancers or athletes, musicians, historically, have not been taught how to effectively look after their bodies, either in terms of preparation for playing, strategies while

playing, or care after playing. The literature has focused on identifying risk factors for injury, and in this section, I will introduce what the literature tells us about causes and risk factors for playing-related injuries in musicians.

In his book 'The Musician's Way: A Guide to Practice, Performance, and Wellness' Gerald Klickstein helpfully lists five causes of injury, from which risk factors can be identified. These are summarised in Figure 2.2.

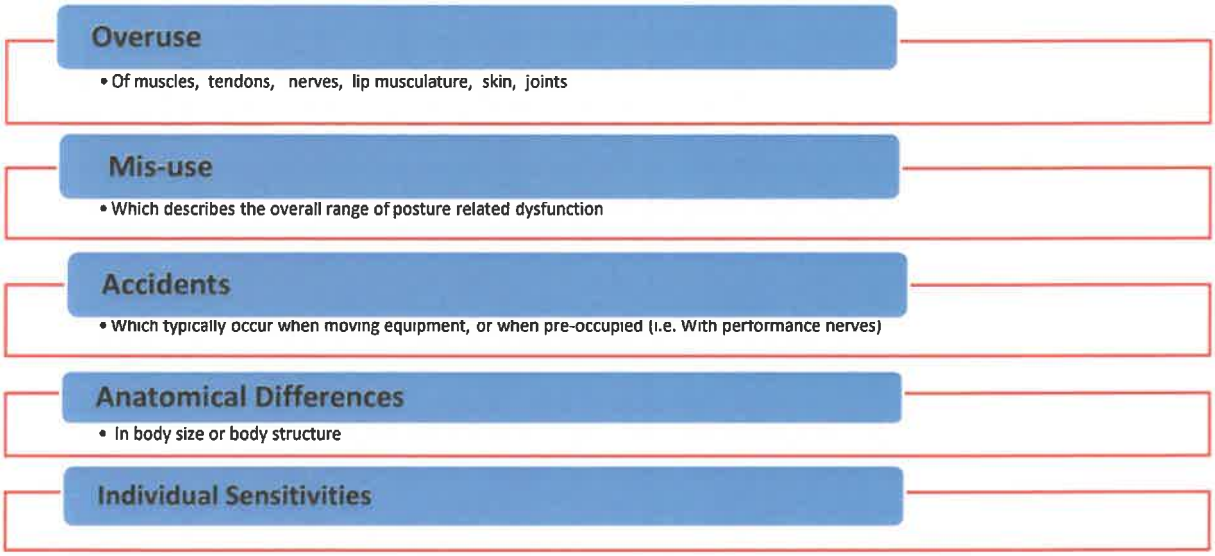


Figure 2.2 Causes of Playing-related Injuries (adapted from Klickstein, 2009 pp.231-237).

This distillation of causes into a list of five generalised but accurate categories is useful. It provides a successful mechanism by which we can readily categorise the findings from a survey by Ackermann & Adams (2004). They asked twenty-six currently injured skilled violin and viola players to report their perceptions of contributing risk factors for playing-related musculoskeletal injury. Concurrently, seven music health experts were asked to report on risk factors for playing-related injuries in musicians. There was a high correlation between the perceptions of the two groups, with the same top five factors indicated by both groups. These five factors were: long hours of practice, sudden increase in playing time, poor posture, technique flaws and insufficient rest breaks. In a survey that set out to profile musicians health and wellbeing, Williamon, Wasley, Burt-Perkins, Ginsborg, & Hildebrandt (2009) used standardised measures to look at health promoting behaviour in students at two UK conservatoires. A key finding was that in terms of cardiovascular fitness, 40 per-cent of them were below average, and the authors raise this low level of fitness as a concern given

the physicality of the work done by musicians. The authors also used health profiling of students to inform the content of a compulsory series of seminars for all incoming undergraduate students at one of the conservatoires in the study. They recommend further work aimed at being able to use health profiling to inform music educators of students' fitness for performance, allowing them to take necessary steps to safeguard students' health and wellbeing. This is the first time that I came across the term safeguarding used in direct relation to music students' health and wellbeing, but over the course of this thesis, the application of safeguarding principles became a major theme in relation to injury prevention in pre-conservatoire level musicians as I made overt links between the incidence of preventable injuries in pupils, and safeguarding at the school (5.2.2, 5.3.2, 5.4.2, 7.3, 7.4.1, 7.4.2).

Driscoll, Ackermann, & Kenny (2011) published the results of a survey about musculoskeletal pain and injury in professional orchestral musicians in Australia and produced a similar but slightly more extensive list of perceived causative factors for playing related injury (Driscoll, et al., 2011). These three sources, comprising two surveys and a book, have all identified and listed similar risk factors and causes of playing-related injuries. Klicksteins list provides more generalised headings, whiles the results of the two surveys provide more detailed causes and risks.

I have made links between Ackermann & Adams (2004) findings from a survey about perceptions of risk factors for playing-related injuries, Klicksteins (2009) description of causes of playing related injuries, and the results of a self-reported survey of 377 Orchestral Musicians in Australia by Driscoll et al., (2011). This is shown diagrammatically in Figure 2.3 on p.31.

This shows the similarities between the findings of the three sets of authors, in work spanning seven years, and involving the opinions of musicians and performing arts medicine health workers. It confirms that these are the risk factors for orchestral musicians. In terms of risk factors for younger musicians, I found no published research about this, which presents another gap in the literature. Of note, as part of some early fact-finding scoping work, I systematically looked at my own physiotherapy records and was able to identify risk factors for playing-related injuries in the pupils at the school (4.1.1).

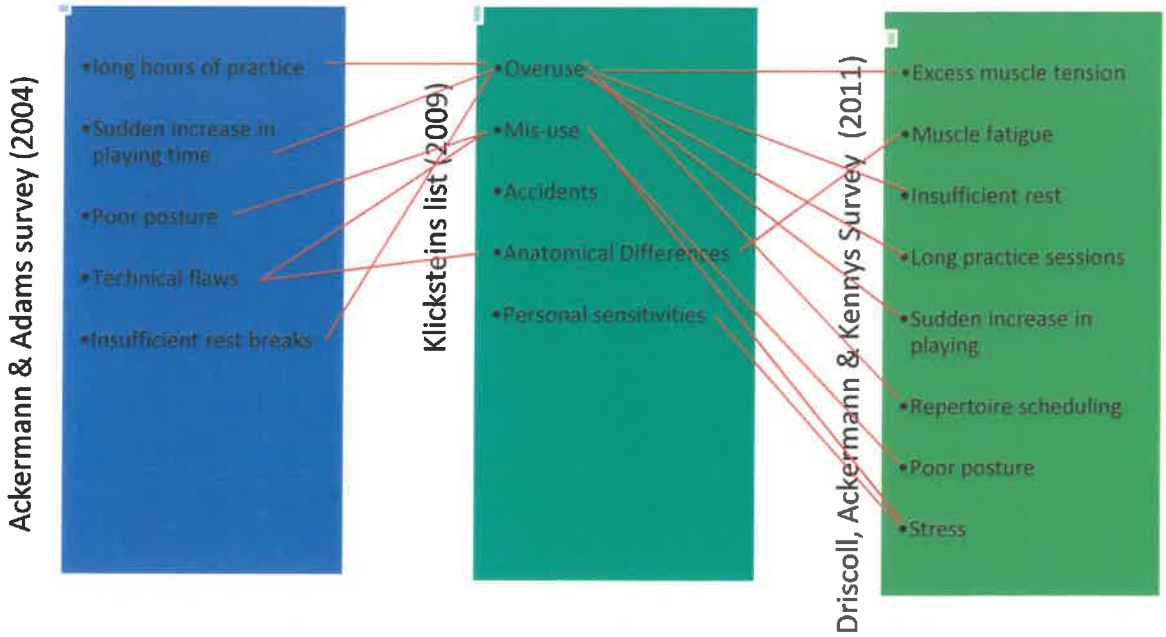


Figure 2.3 Links between risk factors and causes of playing-related injuries as found by Ackermann & Adams, (2004), Klickstein, (2009) & Driscoll et al., (2011).

In this section I have looked at literature which has explored and examined causes of and risk factors for playing-related injuries in professional orchestral musicians and in Conservatoire level instrumental students. Three significant pieces of research detailing risk factors and causes of playing related injury were selected and the findings were tabulated. There is much consistency between the findings and this is illustrated in Figure 2.3. For the first time, the term 'safeguarding' was found to be used directly in relation to the health and wellbeing of music students, and this becomes a significant feature later in this thesis. No research was found about risk factors for injury in younger musicians, flagging another gap in the literature, and suggesting another theme, subject or question for this research.

The following sections will discuss findings from the literature about causes of, and risk factors for, performance related musculoskeletal disorders using three headings which have been taken from the findings of Ackermann & Adams (2004), from Klicksteins list (2009), and from findings by Driscoll et al., (2011).

2.2.3.1 Overuse Injuries

The most common types of injuries that occur in instrumental musicians are either as a result of misuse, or of overuse (Abreu-Ramos & Micheo, 2007; Klickstein, 2009; Rosset i Llobet & Odam, 2007) and this can be seen in Figure 2.3 when all of the perceptions for risk

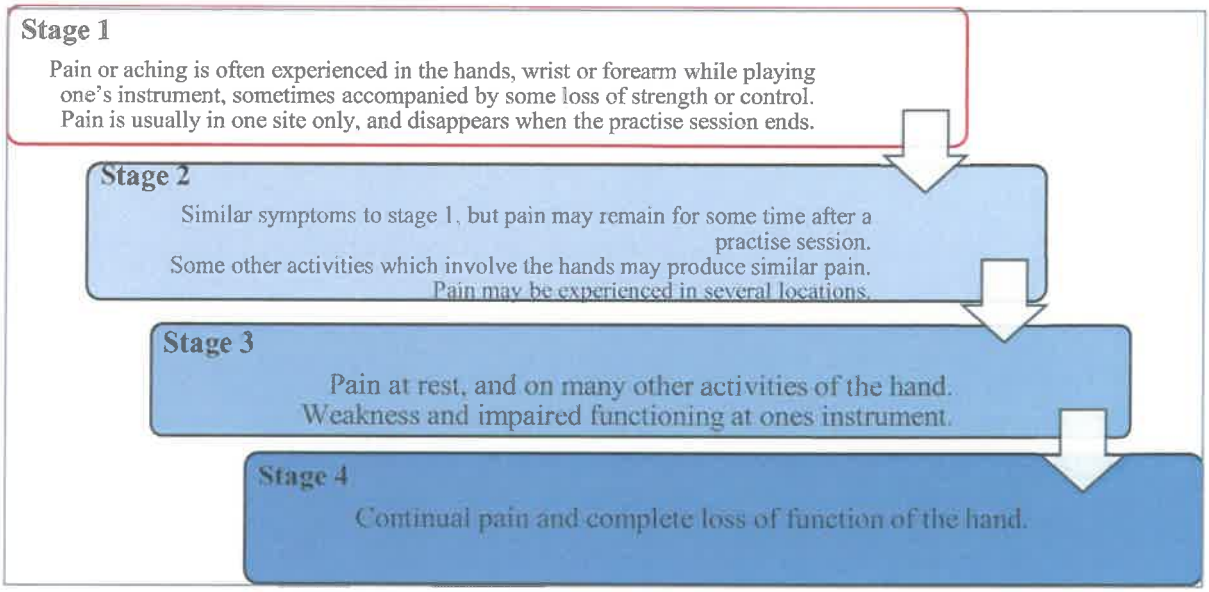
factors found in Ackermann & Adams, (2004) survey and the survey by Driscoll et al., (2011) can be re-classified as either overuse or misuse. In this section I am going to define overuse injury, before looking at characteristics of overuse injuries, and definitions of different stages of overuse injury.

Overuse injury is an umbrella term (used synonymously in both the literature and clinically, with overuse syndrome, repetitive strain injury, repetitive strain syndrome, cumulative trauma disorder, and work related upper limb disorder) to describe 'damage which occurs as a result of overuse or inappropriate use, of part of the body' (Culf, 1998). For the purpose of this section of the literature review, the term overuse injury will be used, because it is unambiguous and easily understood.

Many different circumstances and situations can lead to the occurrence of overuse (Figure 2.3), but most simply put, performance related overuse injuries are caused by making demands on muscles and other soft tissue structures that they are not resilient enough to withstand. This can be because of suddenly increasing playing time, long hours of practice or rehearsal and insufficient rest breaks, physical illness, or a combination of any or all of these factors. However, exertion during playing in different circumstances is not 'like for like': in their survey of professional orchestral musicians in Australia, Ackermann, Driscoll, & Kenny (2012) found that orchestral musicians reported that performance, either in an orchestra pit or on a stage was rated as requiring significantly more exertion than rehearsing and practising, and practising privately requires significantly less exertion than any other activity that was on the survey. It seems likely that this reported increase in exertion during performance means that minutes spent performing (performance minutes) and minutes spent on individual practising (individual practice minutes) are different in their cumulative effect on soft tissues: performance minutes carrying a higher load and therefore a higher risk than individual practise minutes.

Hunter Fry, a plastic surgeon from Victoria, Australia, who had a clinical interest in overuse injuries, describes four stages of severity to classify playing related overuse injuries (Culf, 1998). Overuse injuries can vary in location, duration and severity. The importance of increasing awareness of the potential for playing-related injuries before they occur is of key importance. The message must be to stop playing if there is pain, in order to prevent worsening an injury. This is not easy for working musicians to do: the pressures

(professional, personal and financial) to rehearse and continue working are real. The stages of severity of injury is illustrated in Figure 2.4.



(Culf, 1998 p.13).

Figure 2.4 Stages of playing-related overuse injuries

In this section I defined overuse injuries and explored literature that looked at their characteristics. Overuse injuries are probably the most common and arguably the most easily preventable of all playing-related injuries seen. The significance and relevance of increasing awareness of both the potential for injury and also the risks for injury amongst instrumentalists, credibly becomes another potential theme of, or question for this research.

2.2.3.2 Anatomical Differences

One factor that presents a variety of difficulties for musicians and may predispose certain players to injury is that people with a large variety of different sizes, shapes and morphology play instruments that, within each instrument group, are a broadly similar (or the same) size. In this section I am going to look at the literature that has investigated the role of anatomical differences between people in the development of playing-related musculoskeletal disorders.

In a paper summarising predisposing factors and treatment strategies for playing-related musculo-skeletal disorders, Dr Leo Rozmaryn, an orthopaedic and hand surgeon in Maryland, USA, commented that the intrinsic characteristics of the performer that may

predispose them to overuse injuries include physical strength, flexibility, size, anatomic variations, performing level, and playing style (Rozmaryn, 1993). This is particularly relevant when working with young musicians within a school where the age of the pupils ranges between nine and 18, where not only do the intrinsic physical characteristics of the pupils vary widely, but these characteristics also constantly change as the pupils grow.

In a study which looked at the relationship between physical characteristics and patterns of pain, Ackermann & Adams recruited skilled violin players from universities and orchestras and measured their upper limb length and range of motion. They found that the physical dimensions of the right arm seemed to play a role in potential injury risk: shorter arms are more at risk if the violinist reaches the tip of the bow with their elbow at maximum stretch. Violin players with shorter right arms might be a greater risk of developing right elbow pain than violinists with a longer right arm (Ackermann & Adams, 2003). This particular finding is relevant to young violinists who may be tempted or encouraged to use a full size bow that is simply too long for the length of their arm, putting them at risk of acquiring a right elbow extension injury.

Currently there is a limited body of literature that has explored this issue, but in this section I have raised the significance of the issue of anatomical differences between people who playing instruments that are fairly fixed sizes. The differences that have been reported in the literature as possible contributory factors to over-use injuries include physical strength, flexibility, size (Rozmaryn, 1993), and limb length (Ackermann & Adams, 2003). I was unable to find literature about the impact of growth on playing related injuries. From my clinical experience, which was confirmed by an audit of clinical notes, phases of rapid growth (growth spurts) in children present an additional risk for injury and this is discussed in section 4.1.1.

2.2.3.3 The Role of Working Conditions and Stress

High levels of playing-related injuries and psychological problems linked to stressful working conditions amongst professional musicians and conservatoire level students are well documented, and research has established that stress can contribute to the onset of playing-related musculoskeletal disorders. The following section looks at some of the literature that has investigated this.

Rickert et al., (2013) carried out a qualitative study in Australia, aimed at investigating orchestral musicians and mangers perceptions of those work place environmental factors that contribute to injury, and to investigate the potential influence of work-based organisational and psychosocial factors on injury risk for orchestral musicians. Using in-depth interviews, they found that the participating professional orchestral musicians viewed stress as a major contributor to injury in the workplace. Vervainioti & Alexopoulos have looked at stress in more depth. In 2015 they carried out a systematic qualitative review of literature about job-related stressors of classical instrumental musicians (Vervainioti & Alexopoulos, 2015) and identified seven categories of stressors:

- public exposure
- personal hazards
- repertoire
- competition
- job context
- injury and illness
- criticism

These stressors almost certainly contribute to continuing to play even when injured. This is unquestionably commonplace and in 2007, a qualitative study using focus groups, found that Conservatoire students were willing to play through pain, and readily engage in high risk behaviour in order to continue playing (Park, Guptill, & Sumsion, 2007). There is now a body of literature from conservatoires exploring the attitudes and behaviours that contribute to this: in 2008, (Kreutz, Ginsborg, & Williamon, 2008) used an internet based survey to look at reported health problems in two conservatoires in the UK. Musculoskeletal pain emerged as common, and they identified that symptoms experienced by students reliably predicted their perception of the quality of both their practise and their performance, with fewer symptoms equating to perceived better quality practise and performance. Results suggested that significant proportions of health problems among music performance students are a result of general factors such as posture and fatigue and are not specific to the instrument played. They also looked at the impact of healthy lifestyles on perceived practise and performance quality and discovered that healthy lifestyles appear not to affect perceived practise and performance quality (Kreutz et al., 2008).

This work was followed with another internet-based survey looking at health promoting behaviours in the same two English conservatoires. No significant difference between the health promoting behaviours of the students at the two conservatoires was noted,

but they found that there were varying levels of adherence to individual aspects of health-promoting behaviours. They found that music performance students tend to focus more strongly on psycho-social rather than physical aspects of health, and particularly neglect the aspects of physical health responsibility (Kreutz, Ginsborg, & Williamon, 2009). This echoes the work of (Spahn, Richter, & Zschocke, 2002), who used questionnaires as part of a cross sectional study, and gathered information from music students at a conservatoire. They found that college level instrumental students have minimal conscious awareness of health problems until they happen and give little consideration for prevention. Instead there is a tendency to seek help and make changes once problems arise.

This contrasts with findings from Rickert et al., who, within the framework of a qualitative case study methodology, used in-depth semi structured interviews with ten professional cellists from an orchestra. The findings indicated that a culture existed within the orchestra in which musicians saw injury as a sign of weakness, failure or poor musicianship. This led to musicians continuing to play with considerable levels of pain, while concealing injuries from colleagues and management staff (Rickert, Barrett, & Ackermann, 2014a). This seems to be a retrograde step in behaviour from the conservatoire students participating in the study by Spahn et al., (2002), who reported that they did at least seek help once injured.

In this section I have established that professional orchestral musicians and managers perceive stress to be a major contributory factor to work place injuries (Rickert et al., 2013) and have shown seven categories of work place stressors identified by classical instrumental musicians (Vervainioti & Alexopoulos, 2015). The impact of these stressors on behaviour that is likely to lead to playing-related (or work place) injury was discussed, before looking at some of the literature on health related attitudes and behaviours in conservatoire students (Kreutz et al., 2009; Spahn et al., 2002)

Finally, attitudes towards playing with pain and concealing playing-related injuries were raised (Rickert et al., 2014a; Spahn et al., 2002) revealing that as recently as 2014, a culture was found to exist within a professional orchestra in which musicians saw injury as a sign of weakness, failure or poor musicianship, resulting in musicians continuing to play with considerable levels of pain, while concealing injuries from colleagues and management staff.

This is an unsettling and upsetting finding, and points to a deeply embedded 'show must go on' culture within both the classical music tradition generally, and classical orchestral musicians individually, with a trend toward a lack of proactive management of

playing-related or workplace injuries. This behaviour can, to some extent, be understood by appreciating the 're-creative' nature of the professional classical musicians' role (Dobson, 2010) and identity (Oakland & Ginsborg, 2014), which is steeped in almost two hundred years of tradition and continuity, with values and rituals being passed from one generation to the next. In this context it is not hard to see why change is not readily embraced nor easily implemented.

This is another significant potential research topic: Knowledge about risk factors for injury, and the lack of awareness of them, seems like a fundamental issue to be addressed if injuries are to be prevented. It is becoming increasingly evident that this research can be directed to increase awareness of risk factors for injury, as pupils at the school currently are being prepared through the classical music tradition to join this workforce and through this process are highly likely to imbibe traditional attitudes, beliefs and behaviours, unless there is a significant change in knowledge of and attitudes towards playing-related injuries.

2.2.4 Health Promotion for Musicians

In this section I am going to provide a definition of health promotion and then explore the literature that has looked at health promotion for musicians.

Health promotion has been defined as "the combination of educational and environmental supports for actions and conditions of living conducive to health" (Green & Kreuter, 1991). As far back as 1991, research in the field of health promotion was distinguishing between health education and health promotion: health education has been defined as "any combination of learning experiences designed to facilitate voluntary actions conducive to health" (Green & Kreuter, 1991). It is clear that health promotion involves the combination of health education with administrative policy and decisions.

The field of performing arts medicine has long established that the incidence of playing-related musculoskeletal disorders amongst professional instrumentalists and conservatoire level students is high, and we have seen that physical aspects of health are not prioritised. There is strong recognition of the need for tailored health promotion courses to be taught to music students (Papageorgi, Creech, Haddon, Morton, De Bezenac, Himonides, & Welch, 2010; Spahn et al., 2002; Spahn, Strukely, & Lehmann, 2004) and since the publication of the initial recommendations of the 'health promotion in schools of music' document in September 2006 (Chesky et al., 2006), this has been reflected by the introduction of health

promotion modules within the curriculum at many conservatoires and music colleges. Despite these initiatives, universal improvement in health awareness has not been found and health awareness among Conservatoire level instrumentalists has been found to be poor compared to professional orchestral players (Rickert, Barrett, & Ackermann, 2015).

In 1993, Zaza used a health promotion framework, originally described by Green & Kreuter (1991) and attempted to apply it to prevention of musicians' playing-related health problems. She noted that musicians are generally a well-motivated population and that musculoskeletal problems related to playing have multiple causes many of which are changeable, making playing-related musculoskeletal disorders largely preventable. The logical first step is to modify practice-behaviour, which is within the musicians control. This can be facilitated by instrument teachers and supported by peers. Zaza concluded that the most appropriate group for implementing prevention is instrument teachers (Zaza, 1993), but recent research has found that although they are ideally placed to implement injury prevention strategies they do not feel that their training equips them to do this (Norton, Ginsborg, Greasley, & McEwan, 2015). The role of the instrument teacher is discussed in more depth in Section 2.2.6.

Strategies to reduce risk of playing-related pain or injury have included a study which explored whether strength training or endurance training was more beneficial for undergraduate music students. It concluded that endurance training reduced perceived exertion by musicians while playing (Ackermann, Adams, & Marshall 2002). This is not a surprise as prolonged orchestral playing can be compared to an endurance event more closely than to a strength event. More recent research has looked at managing risk factors for injury in professional orchestral musicians and following development of a specific exercise programme for professional orchestral musicians by Chan, Driscoll, & Ackermann (2013) who demonstrated that exercise programmes tailored for musicians were positively effective at reducing the frequency and severity of playing-related musculoskeletal disorders in professional orchestral players.

This section has defined health promotion and health education, and has looked at the need for, and history of, health promotion within music education. Despite the subsequent introduction of health promotion modules within many music colleges and conservatoires, improvement in health awareness has not been found and health awareness among conservatoire level instrumentalists has been found to be poor compared to professional

orchestral players (Rickert et al., 2015). Instrument teachers are ideally placed to provide pupils with exemplars of injury prevention practice and strategies for health promotion (Zaza, 1993), but do not feel equipped to do so (Norton et al., 2015). This raises the obvious need for instrument teachers to issue to be better prepared to fulfil this key role. This is discussed in more detail in Section 2.2.6, and it becomes clear that instrument teachers at the school must be involved in any change initiative.

2.2.5 Young Musicians

In this section I will look at some key aspects relating to the development of children into musicians, and then look at some of the literature related to physical activity and fitness levels in children, and how this impacts young musicians.

Musicians develop high levels of a variety of specific skill sets. There are general skills, common to all musicians, such as musicianship, reading of music, listening skills, and background knowledge of music. In addition, over considerable time, instrumentalists and singers also develop expertise in highly specialised and specific technical and motor skills required for individual instruments. These motor skills develop as a result of motor learning which has been defined as:

> 'The changes associated with practise or experience, in internal processes, that determine a person's capability for producing a motor skill'
>
> (Schmidt & Wrisberg, 2008 p.4) .

The science behind motor learning emerged from the fields of sports science (Annett, 1994; Magill, 2010; McNorris, 1998; Shea & Wulf, 1994; Singer, 1980), and the rehabilitation of patients with movement impairments as a result of neurological disorders (Carr & Shepherd, 1989; Krakauer, 2006). Elite sport development and performance is both well-resourced and well researched: there are entire university departments dedicated to sports science. The dissemination of information from these departments, including through sports coaching networks, have helped to broaden the understanding of the teaching of motor skills (coaching) within the context of sports development.

Currently however, teachers of musical instruments do not tend to know of or use this well-established knowledge base about teaching motor skills. It is probable that the stages essential to the motor learning process are generally covered by teachers, but without

acknowledgment or awareness of the process. The lack of overt or tacit awareness of the motor learning process amongst instrumental teachers conceivably means that learning opportunities are not being maximised. Practitioners at the cutting edge of performing arts medicine are working to change this: for example, the primary learning objective of the performing arts medicine symposium in July 2013 was for attendees 'to improve and enhance practices and the well-being of their patients and clients by integrating well-established science, psychology and technology of sport and the performing arts'.

The difference between the majority of people who never learn to play an instrument at all, or who start and then give up, and those people who become skilled enough to play professionally is mainly due to differences in experience, opportunity, temperament, personality, and motivation (Howe, 1990; Sloboda, 1994). In successful musicians, these factors have combined to enable the vast amount of time spent practising required to develop skills at a high level (Sloboda, 1994), and there is evidence to indicate that the amount of regular practise a person does is an excellent predictor of the individuals' level of success (Ericsson, Krampe, & Tesch-Romer, 1993).

Elite young musicians are unusual in their devotion to musical activities and in their remarkable willingness to persevere with extended periods of practise time. (Creech & Hallam, 2011) explored the interpersonal interaction that pupils had with their teachers and with their parents within the context of learning a musical instrument and they reported that parental support was a key factor in sustaining a child's musical wellbeing. This study looked at children who were living at home. There is no comparable work looking at children boarding at a specialist music school but educating young musicians in specialist music schools provides them with a cohort of like-minded friends and colleagues who understand their passion for music (Howe, 1990). It also provides an environment where keenness, encouragement and opportunity to practise for extended periods of time each day put them at risk of acquiring overuse injuries.

Incidence of overuse injuries in school-aged musicians (under 19 years) was first documented in a survey of secondary school age children who played in youth orchestras (Fry, Ross & Rutherford, 1988). He found that 63 per-cent of female and 49 per-cent of male school children gave a history of 'music-related' pain which had a positive correlation to the amount of time spent practicing. The higher incidence of playing related injuries among girls than boys found by Fry was echoed by Lockwood (1988) who surveyed high level secondary

school aged musicians via a questionnaire and found that playing related problems were significantly more common amongst girls (68 per-cent) than boys (47 per-cent).

The majority of research on school aged young musicians has been in the form of surveys establishing incidence and prevalence of, or attitudes towards, playing related pain and injuries (Ackermann & Driscoll, 2013; Britsch, 2005; Fry & Rowley, 1989; Ranelli, Straker, & Smith, 2008; Ranelli, Straker, & Smith 2011; Shoup, 1995; Vinci, Smith, & Ranelli, 2015). Amongst these surveys three found that a high percentage of respondents (50 per-cent, Ackermann & Driscoll, 2013; 79 per-cent, Lockwood, 1988; 44 per-cent, Shoup, 1995) believed it to be acceptable to continue playing with pain or believed that pain was a normal part of playing an instrument.

This might in part be explained by Ralph Manchester who wrote a thought-provoking article titled 'Musculoskeletal Problems of Adolescent Instrumentalists' where he raised the issue of increased risk-taking behaviour in some middle adolescents (aged 14-17) and described the assumption of immortality that many young adults feel. He suggested that risk taking and the assumption of immortality can combine in some cases so that some adolescent performers may believe that they can practice without any risks (Manchester, 1997).

It is certainly clear that young school aged musicians are undergoing numerous significant changes in physical development, emotional development (Manchester 1997), intellectual development and musical development both in terms of the skill acquisition of learning an instrument, and development of musicality (Creech & Hallam, 2011). This places them under a unique set of pressures and demands, different in many aspects from adult professional musicians, who are no longer in the phase of skill acquisition and who are no longer growing. These pressures and demands are almost certainly amplified within the setting of a specialist music school, and yet there was no overt strategy in place within the school to monitor and identify pupils experiencing ill effects as a result of these demands.

I am now going to look at some of the issues relating to levels of physical activity and fitness and how this might impact on young musicians. There is much evidence about the trends in, and attitudes towards fitness amongst adolescents and physical inactivity has been found to be more prevalent amongst females than males (Armstrong, Balding, Gentle, & Kirby, 1990), and it is known that inactive lifestyles in childhood or adolescence may be related to physically inactive and unhealthy lifestyles adopted in adulthood (Macfarlane, 1997).

In addition, many instrumentalists (pianists, harpists, bassoonists, French horn players and cellists) always sit to play. Other instrumentalists (violin, viola, flute, oboe, trumpet and trombone), who may (or may not) stand during lessons or to practise, inevitably sit during orchestral work or ensemble playing. Owen, Healy, Matthews & Dunstan, (2010) propose that 'too much sitting' is distinctly different from 'too little exercise' and observe that as a result of a combination of factors (time spent in cars, time viewing computer screens or TV and use of games consoles) 'too much' sitting is common in teenagers. They note distinct and deleterious physiological effects as a direct result of sitting, with unbroken periods of muscular unloading (when sitting) resulting in loss of local contractile stimulation leading to reduced glucose uptake and suppression of skeletal muscle lipoprotein lipase activity which is needed for the production of high-density lipids - the 'good' type of cholesterol.

Guidelines issued by the World Health Organisation 'Global Recommendations on Physical Activity for Health' in 2011, supports the conclusion that 5-17 year olds should be doing 60 minutes of physical activity per day (World Health Organisation, 2011). This is enough to promote healthy bones, muscles and joints, improve function of heart and lungs, improve co-ordination and movement control, promote maintenance of a healthy body weight, and help control symptoms of anxiety and depression. This could be of particular relevance to a sub-group of pupils at the school who experience high levels of performance anxiety or who are troubled by stress.

Performance anxiety is common for musicians and can occur in any performance situation, such as a concert, or during an exam or an assessment. Brugues (2011) found that 18 per-cent of conservatoire level students reported that anxiety was severe enough to have a negative impact on their performance. It can produce unpleasant emotional feelings of fear and dread and can also produce physiological changes such as measurable increase in muscle tension, measurable increase in heart rate, sweat rate, and respiratory rate (Brugues, 2011) which can all impact negatively on fluency of playing. This is because acute stress triggers the release of the stress hormones cortisol and adrenalin as a 'fight or flight' response.

Without a physical response (fighting or fleeing) to an acute stressor, or in the absence of physical activity, the levels of cortisol and adrenaline can remain raised, stimulating the sympathetic nervous system and increasing baseline anxiety levels. Increased levels of physical activity can be incorporated into a strategy to combat performance anxiety and stress by its influence on the endocrine system: exercise causes a release of endorphins that calm

the sympathetic nervous system, produce feelings of wellbeing and reduce baseline anxiety. Physical activity has a preventative and restorative effect on anxiety and can therefore contribute to reducing or managing performance anxiety. Increased activity levels with resultant improvements in fitness levels is not hard to achieve (Cheung & Ng, 2003) and evidence strongly suggests that more physical activity will benefit the pupils across a range of domains:

- Increase in health and fitness
- Reduction in stress and anxiety
- Increase in strength and flexibility contributing to reducing the risk for injury.

However, many of the pupils at the school do not like traditional physical education and currently do not make an overt link between physical well-being and their ability to perform musically. Sympathetic to this, Kirk (2002) suggested that:

> 'if quality physical education is our aim, then we must scrutinise what currently goes on in the name of physical education practices.....We must then formulate and advocate vigorously for forms of physical education that are specific to human interests and needs of young people within specific, local contexts'
>
> (Kirk, 2002, in Bailey et al., 2009, pp.18-19)

This strengthens the idea that we could usefully design and implement a programme of physical activity at the school, that effectively engages the specific interests and needs of elite young musicians by making physical activity overtly relevant to improving their ability to play, thereby tapping into their primary interest and passion of making music.

This section has looked at some of the key issues that are specific to young musicians, from sports science and neuroscience behind acquisition of motor skills (Annett, 1994; Carr & Shepherd, 1989; Krakauer, 2006; Magill, 2010; McNorris, 1998; Shea & Wulf, 1994; Singer, 1980) to specific behaviours common to teenagers linked directly to their emotional development (Manchester, 1997) and it has looked at the impact of activity levels on health, fitness and stress.

Numerous surveys have established that the reported incidence of playing-related musculoskeletal disorders in young musicians is high, and there are findings spanning 25

years which indicate that a high percentage of respondents believed it to be acceptable to continue playing with pain, or believed that pain was a normal part of playing an instrument (Ackermann & Driscoll, 2013; Lockwood, 1988; Shoup, 1995).

The high incidence of playing-related musculoskeletal disorders in young musicians informs us that work towards injury prevention in young musicians is still necessary and the reported shocking belief that playing with pain is acceptable, informs us that efforts must continue to be made to change this.

2.2.6 The Role of the Instrument Teacher

In this section I will be looking at the role of the instrument teacher in the development of young musicians and at some of the issues surrounding one to one pedagogy.

The role that the instrument teacher plays in the development of the young musician is clearly significant. Research has found that, in particular, the relationship that develops between pupil and teacher can be powerful and life-changing (Creech & Hallam, 2011), with a positive correlation between the interpersonal 'warmth' of their earliest music teachers and the later musical success of the pupil (Davidson, Sloboda, & Howe, 1996). Additionally, the interpersonal dynamic between the pupil and the teacher appears to play a critical role in the instrumental progress of young musicians: in a study which used interviews with 257 children to look at the role of some key characteristics in the development of musical ability in children, the most successful musical learners highly rated their first instrument teacher on personal characteristics such as 'friendliness' (Davidson, Moore, Sloboda & Howe, 1998). There is further evidence to show that successful instrument learners speak about their instrument teacher with 'the kind of touching admiration that can only be earned by a person who genuinely cares and can truly inspire' (Howe & Sloboda, 1991).

Instrumental musicians typically have one-to-one lessons from a single teacher. This pedagogical model is most commonly used at the school, despite there being little research to support the practice of one-to-one pedagogy. It is example of the classical music tradition continuing to do what it has always done. Helena Gaunt analysed the perceptions of twenty principal study teachers in a UK conservatoire. What emerged clearly from the analysis was the isolation that the teachers feel, with few support mechanisms, or opportunities for professional discussion. The findings showed that teachers felt that this might be problematic within the context of the intense and complex relationships that develop between teacher and

pupils. What also emerged was that they all had a strong knowledge and skill base drawn from their own professional experience and expertise as performers, while only one of them had any training as a teacher. All of the teachers indicated that they had little engagement with what else the students were involved with in the wider curriculum within the conservatoire (Gaunt, 2008).

Gaunt followed this with an analysis of the perceptions of 20 instrumental and vocal students on one-to-one tuition. The study found that the students had quite diverse experiences in how their one-to-one tuition was structured, with variety in length and frequency of lessons. One clear finding was that all of the students were happy with their teacher and with one-to-one tuition and that they particularly valued the level of musical and technical detail that could be explored. However, the students described how they tend to adopt a passive role and attitude within one-to-one pedagogy and some students felt that the replication in playing that occurs as a result of one to one teaching can inhibit student creativity (Gaunt, 2010). This passivity was also identified by Creech who found that teachers and pupils can become entrenched in fixed patterns of behaviour in the way they interact during one-to-one lessons. She concluded that this passivity potentially places constraints on teaching and learning outcomes (Creech, 2012). In another study based within a UK conservatoire, Gaunt explored the dynamic of power that can exist between teacher and students, and found that students who are experiencing such a relationship may show a reluctance to develop artistic and professional self-direction (Gaunt, 2011).

Gaunt (2010), highlights the need for professional development and support of instrumental teachers and concludes that teachers and students who have long histories of engaging with one-to-one tuition may need proactive encouragement to consider the potential of other pedagogies such as peer learning, or group teaching. Wollner & Ginsborg (2011) assert that, although it may be seen to be 'challenging tradition', an ideal teaching model might include a mixture of one-to-one lessons, team teaching and masterclasses. Gaunts' study concludes by highlighting the need for continuing professional development for instrumental and vocal teachers (Gaunt, 2010). Smilde (2009) found that professional musicians identify themselves as lifelong learners, but the focus of their learning is musical rather than pedagogical.

Instrument teaching is an entirely unregulated profession, and there is no requirement to have any teaching qualification, or to maintain levels of CPD. Indeed, the instrument

teachers at the school are not required to have a teaching qualification, and are not required by the school to participate in any structured CPD. It may be safe to assume that the instrument teachers are not deploying evidence-based best practice in their teaching.

The nature of musicians careers is changing: most musicians now have a portfolio career which may contain several strands, for example, teaching and also performing, sometimes with responsibilities to multiple ensembles. Careers can also change in direction over their course. Portfolio careers benefit from a number of skills beyond performing or teaching, such as entrepreneurship and other generic skills, including strong interpersonal skills, which facilitate appropriate interaction with presenters and promoters. The changing nature of musicians' work makes lifelong learning strategies and the development of transferable skills imperative for musicians. Instrument teachers are ideally placed to actively encourage and model lifelong learning strategies for their pupils (Smilde, 2005) and this should include current, evidence-based best practice in injury prevention and performance wellness.

The identification of instrument teachers as potential health promotors or advocates extends back to 1993 when Zaza identified them as the most appropriate group for implementing prevention strategies such as modification of practice behaviour, introducing warm-ups, pacing, breaks in practice, and cognitive rehearsal. She noted that students may find it extremely difficult to engage with something affecting their education if their teacher disapproves. Conversely if the teacher endorses a behavior the pupils is more likely to adopt it (Zaza, 1993). This was echoed by findings of a phenomenological inquiry which looked at the three roles of musician, worker and teacher, that professional musicians inhabit, and illustrated the high regard in which music teachers are held and how important their influence can be on developing musicians (Guptill, 2011). These findings all highlight the significant role and influence of the instrument teachers. They also highlight areas for improvement in the continuing professional development of instrument teachers. Lockwood (1988), who was a physician, rather than a musician, went as far as to suggest that the education of music teachers should include an upper limb conditioning programme which should be taught to students as an 'integral part of learning to play an instrument' and as a means of reducing the prevalence of playing-related musculoskeletal disorders. Sadly, this has not been done.

Instrumental and vocal teachers have been identified as potential health promotion advocates who could work with members of a multi-disciplinary team to support music

students well-being (Lockwood, 1988) is clear that instrument teachers are a logical target for education about injury prevention for themselves and also for their pupils. The school in the study however, is currently falling within the 'industry normal' in that most lessons are one-to-one, and there is no in-service training or continuing professional development for the visiting instrument teachers. I would suggest that a rolling programme of continuing professional development for instrumental teachers (as is required by statute for other professional groups such as nurses, physiotherapists, doctors, dentists, airline pilots and lawyers) could be used to update instrumental teachers on issues such as current research findings on pedagogy, motor learning, performance psychology, injury prevention and health promotion for musicians, and safeguarding, as well as reviewing technical aspects of performance, and creating opportunities to develop peer support networks.

There has been considerable work in the field of performing arts medicine since the early 1980s, but despite the findings that the majority of playing-related musculoskeletal disorders are preventable, initiatives for preventing playing-related disorders are still rare.

Early experiences in instrument lessons establish habits that can help or hinder musicians throughout their careers and researchers have argued that health promotion should be included in musical education from the very first lesson (Blackie, Stone & Tiernan, 1999; Chesky et al., 2006; Spaulding, 1988). Recent work has looked at instrument teachers' views on a multi-disciplinary team approach to health promotion in musicians (Norton et al., 2015). Data was gathered via an online survey, from instrument and vocal teachers, about their views on their potential role as part of a multi-disciplinary team of health promotors for musicians. Teachers did not feel that their training prepared them to be partially responsible for the wellbeing of their students and this highlights the need for efforts to be directed towards providing education about health promotion and injury prevention to instrument and vocal teachers, perhaps via a strand within this research. Norton's (2016) PhD thesis submission, titled 'Health Promotion in Instrumental and Vocal Music lessons: The teachers Perspective' concluded that instrument teachers are appropriately placed to act as health promotion advocates, in most cases are already doing so, and to a large extent, are interested in learning more about health promotion (Norton, 2016).

This section has explored the role of the instrument teacher in the development of young musicians. It questions the widespread practice of one-to-one pedagogy in music education, and reveals some of the pitfalls of this pedagogy: the isolation that teachers can

feel using this model (Gaunt, 2008), the passivity and inhibition of creativity that it can encourage within students (Creech, 2012; Gaunt, 2010) the power dynamic of the teacher /pupil relationship (Gaunt, 2011), and the significant influence that instrument teachers can have over pupils: influencing attitudes and behaviours (Guptill, 2011; Zaza,1993). This led to an exposition of the literature that has identified instrument teachers as being ideally placed to influence attitudes towards health promotion in young musicians (Norton et al., 2015; Zaza, 1993), with the recommendation that health promotion for musicians should be incorporated in teaching from the very first lesson (Blackie et al., 1999; Chesky et al., 2006; Spaulding, 1988). The literature fully acknowledges that many instrument teachers do not feel equipped to take on this role and identifies the need for some form of continuing professional development for instrument teachers to equip them for this role (Norton et al., 2015).

This powers the idea that including instrument teachers in health promotion activities at the school would be a fruitful strategy and raises the importance of specifically including them within the research process, both as health promotors and as health advocates for their pupils.

2.2.7 Other Stakeholders

In addition to the instrument teachers there are a large number of stakeholders involved in the school, including parents, extended family, the instrument teacher, boarding house staff, academic subject staff, peers, friends and the young musician themselves. At the time of writing this, previous research looking at stakeholders other than instrument teachers or the young musicians themselves is extremely limited.

I found no research exploring the role of peers or friends, and only a handful of studies which have looked at the role of parents: most recently, parents of teenage children at an academically selective high school and at a specialist music high school, were surveyed about their attitudes and practices to playing related health issues. It found that parents of pupils at both schools seemed to recognise the importance of their children having good knowledge of health and normal body function in order to optimise musical performance and minimise the adverse impact on health of playing. It also found that while none of the parents at the academically selective school accepted the notion that pain associated with playing is normal, half of the parents of pupils at the musically selective school indicated that they

accepted this as normal (Ackermann & Driscoll, 2013). Ackermann & Driscoll refer to the work already done in the domain of injury prevention in sports, identifying parents as key stakeholders and highlighting the integral part that parents play in the prevention of sports injuries in their own children. They suggest that parents can play a similar role in preventing playing-related injuries of young musicians, although clearly, attitudes towards playing with pain need to change for this to be a successful strategy.

Howe & Sloboda, (1991a) interviewed 42 students and 20 parents at a specialist music school in the UK. Participants were encouraged to talk freely about various experiences which individual children perceived as having been significant influences on learning their musical instrument. They found that 67 per-cent of the pupils came from families with musical backgrounds, and with parents who were actively involved in their childs music making. Many parents sat in on instrument lessons and also sat with the child during instrument practise. Many of these pupils grew up thinking that family involvement with music was entirely normal, never occurring to them that music was not a part of everyday life for some people.

Davidson, Sloboda and Howe, found that successful instrument learners have a different musical relationship with their parents than children who start learning an instrument and then give up. A major characteristic of this relationship is not that the parents are actively engaged in music making themselves, but that they are actively and enthusiastically engaged with their childs music making (Davidson et al., 1996). This investment in, commitment to and enthusiasm for their childs musical development was also identified by Howe and Sloboda, (1991a) amongst parent of successful young musicians.

This section on other stakeholders is necessarily brief because I found very little literature that had sought the opinions, beliefs or attitudes of stakeholders other than parents, instrument teachers or pupils, towards health promotion or injury prevention in young musicians, but it is clear that instrument teachers and other key stakeholders (1.2.4, 2.2.6, 3.3.3) should be involved and I intend to include key stakeholders in this research.

2.2.8 The Case for a Preventative Curriculum at a Specialist Music School

The term 'preventative curriculum' is widely used within health promotion settings, child protection settings and within the teaching of the Personal, Health and Social Education (PHSE) curriculum in the UK, and broadly, this describes a curriculum that focuses on

enabling students to develop successful preventative strategies to a range of undesirable or damaging behaviours, rather than focusing on developing skills to manage a crisis once it has occurred (Forward, 1986; Kelly, Longbottom, Potts, & Williamson, 2004). It seems obvious to introduce within the school a preventative curriculum with direct reference to prevention of playing-related disorders.

Now in its fourth decade as a distinct clinical speciality, performing arts medicine currently offers little in terms of injury prevention or advice on preventative curricula. Focus of research has predominantly been on studies looking at incidence of playing related injuries and biomechanical elements of disease (Guptill, 2011; Manchester, 2006; and Table 2.1). In this section I am going to present the case for the development of a preventative curriculum within a specialist music school.

We know that instrumental musicians place extremely high physical demands upon their bodies, comparable with elite dancers or athletes (Kreutz et al., 2008; Watson, 2009) and yet traditionally are taught little about their bodies, or about injury prevention. We know that playing related injuries can range in severity from inconvenient to career-ending (Culf, 1998; Zaza, 1998). We know that the developing field of performing arts medicine identifies injury prevention teaching as a priority for those involved with music education (Rickert et al., 2013; Williamon et al., 2009). There is now a distinct move towards talking about performance wellness and performing arts health, rather than performance related injuries and performing arts medicine: in 2012 the International Society for Music Education (ISME) initiated a number of special interest groups, including 'musicians' health and wellbeing'. Kreutz et al., (2008) suggest that 'fitness for players' type modules in higher education and conservatoire settings should emphasise the importance of physical fitness generally, paying particular attention to posture, and use of the upper limbs, and focusing on prevention of fatigue. Many young musicians and their parents display concerns about the risk of getting injured while participating in sporting activities, but reassurance can be given by findings that being involved in vigorous-intensity physical activity such as running, fitness training, swimming, yoga and dancing did not correlate to more injuries (Baadjou, Verbunt, van Eijsden-Besseling, Huysmans, & Smeets, 2015).

Pre-conservatoire age music students, however, are not routinely, overtly and systematically given the knowledge and skills required to optimise their physical health, modify their habitual behaviour and minimise their risk of injury. This is reflected by the

consistent rates of playing-related musculoskeletal disorders seen at the School and by research findings from the CPS at the Royal College of Music which measured the health promoting behaviours of undergraduate students at the Royal College of Music and the Royal Northern College of Music (many progressing from the School to both of these). They found only moderate levels of engagement in health promoting behaviours (Kreutz et al., 2009).

In 2010, Zander et al. looked at the introduction of a preventative curriculum over the first and second years of university level music education, and found that it had a positive impact on students' performance and their attitudes towards health, but that it did not have an impact on pre-existing physical symptoms (Zander, Spahn, & Voltmer, 2010). This directs us to the importance of attending to young musicians physical and emotional health from the earliest age, and to the potential advantages of developing a preventative curriculum prior to university or conservatoire level musical education.

An overt introduction of injury prevention strategies would provide the opportunity to develop health promoting behaviours in young music students before they reach conservatoire level of study. This is strongly supported by Shafer-Crane (2006), who advocates teaching musicians how to identify injuries early, by Ginsborg, Spahn and Williamon who advocate that changes in training of musicians should be made from the earliest stages, so that they learn not only to prevent injury and avoid other disorders, but also to enhance their health and wellbeing (in Macdonald, Kreutz, & Mitchell, 2012), and by Ginsborg, et al., (2009) who recommend that further effort is needed to train young musicians in a pre-conservatoire setting, in how to achieve a positive and healthy approach to both learning and performing music, and how to build a robust psychological profile that will sustain the musician through a lifetime of making music at the highest level. They espouse that this would be beneficial for individual musicians and for the profession as a whole. Evidence based techniques, such as mental practise (Driskell, Copper, & Moran, 1994), that can enhance motor skills learning, including instrument playing, could be introduced in order to make practise more efficient. In Australia, the benefits of injury prevention are felt at government level, as national workers-compensation schemes pay for professional orchestral musicians when they claim sick pay. The high levels of payment to orchestral musicians from workers compensation schemes in Australia was the trigger for funding research into the impact of the Orchestral Environment on the health and wellbeing of orchestral players. (Rickert et al., 2013; Rickert et al., 2014a; Rickert, Barrett, & Ackermann 2014b).

Aside from preparing young musicians for the psychological component of performing as a musician, there has been research about introducing specific exercise programmes aimed at professional orchestral musicians which might be usefully introduced within a school setting with a view to better preparing pupils physically. Ackermann et al., (2002) recruited 18 volunteer undergraduate music students and randomly allocated them to either six weeks of upper limb and trunk strength training or endurance training. They found that endurance training significantly reduced the perceived exertion of playing, and it is reasonable to assume that a programme of endurance training for trunk and upper limb muscles for the pupils at the school could be equally beneficial. More recently (Chan et al., 2013) have designed and implemented a specific exercise programme for professional orchestral musicians and found that it effectively reduced both the frequency and severity of playing-related musculoskeletal disorders.

However, there is currently a gap in the literature in relation to exploring and understanding factors involved in the development or prevention of playing-related injuries in pre-conservatoire level, school-age instrumental musicians. The specialist music schools seem ideally positioned to be at the forefront of such developments: they have a cohort of young musicians, most of who progress to conservatoires, most of who practice for many hours each day, and some of whom become injured during this process.

2.3 Chapter Two - Summary and Early Draft of Research Questions

In Chapter Two, I acquired a deeper understanding of the issues around playing-related musculoskeletal disorders in young musicians through reviewing and critically discussing relevant literature from multiple related fields. This deeper understanding increases the credibility of the thesis in terms of the trustworthiness framework (see section 3.2.6 and Table 3.1).

After looking at literature that introduced performing arts medicine (2.2.1 pp23-25), I focused my reading to topics that were directly relevant to understanding the phenomenon of playing-related injuries in young musicians in more depth and breadth:

The abundant literature that has looked at incidence of performance related musculoskeletal disorders indicates without exception, that high numbers of professional orchestral musicians and conservatoire students develop such injuries (2.2.2 pp25-28)

The literature examining causes of, and risk factors for such injuries strongly suggests that most of these injuries are preventable (2.2.3 pp28-37). However, work on health promotion initiatives for orchestral musicians and conservatoire students has not resulted in an increase in health awareness amongst conservatoire level students and the incidence of injury, between 1998 and 2016, remained consistently high (2.2.4 pp37-39).

I then looked at aspects of pedagogic relationships in instrument and at literature which explores the significance and influence of the instrument teacher and it showed the significance and the influence of the instrument teacher in the musical development of the pupil (2.2.6 pp44-48). Finally, I looked at literature that about the introduction of a preventative curriculum in the conservatoire setting, and how it supports the introduction of a preventative curriculum at the earliest opportunity, including in a pre-conservatoire setting (2.2.8 pp49-52) such as the specialist music school that is the setting for this research.

I found minimal literature about issues relating to health of pre-conservatoire age young musicians, and it was limited to studies revealing incidence of, and parental attitudes towards, playing-related injuries (Ackermann & Driscoll, 2013; Fry & Rowley, 1989; Ranelli et al., 2008; Ranelli et al., 2011; Vinci et al., 2015). As of November 2016, there was no literature about injury prevention in elite young musicians in a specialist music school.

This literature review

- **has revealed a gap in the literature** about prevention of playing-related injuries in pre-conservatoire age young musicians,
- **has directed my research** towards the potential benefits of introducing a preventative curriculum within a specialist music school
- has revealed that the most recent research **confirms that instrument teachers are highly influential** and are well positioned to act as advocates for health promotion, although many feel that they do not have the right information for this role
- **suggested** that there is a need **for instrument teachers** to **use their significant influence to advocate for health promoting behaviours in their pupils** and in order to do this, they need to feel secure in understanding the information that they have.

My professional involvement and observations working within the setting of a specialist music school, in combination with findings from the literature, have highlighted the following issues as being of particular relevance:

- the incidence of playing-related injuries (2.2.2)
- the risk factors for playing-related musculoskeletal disorders (2.2.3)
- the influence and role of key stakeholders (2.2.5, 2.2.6, 2.2.7)
- the need to develop and implement a preventative curriculum (2.2.3, 2.2.8)

As a result, the first drafts of two research questions have been developed

Research Question One (first draft):

- *To what extent can raising awareness amongst key stakeholders, of risk factors for playing-related musculoskeletal injuries, influence risk taking behaviour (in relation to musculoskeletal injuries), in elite young instrumental musicians at a specialist music school?*

Research Question Two (first draft):

- *To what extent can the incidence of playing-related musculoskeletal injuries be measurably reduced, as a result of increasing awareness of risk factors for injury?*

At this point, these two questions are relevant and informed, but they are not complete. The final iteration of the research questions was completed once a further piece of information about risk factors for playing-related injuries emerged from early fact-finding scoping work (4.1.1) early in the first cycle of Action Research. The finalised Research Questions can be found in section 4.2.

In the next chapter, Chapter Three, the Research Aims are stated, and a number of methodological and practical considerations about research design are explored. The selection of the appropriate methodology is discussed and then the design and methods to be used in the initial stage of the research are described.

Chapter Three - Methodology and Design

In this chapter I state the research aims, which were informed by the literature review. and then look at a number of methodological considerations before providing a rationale for the selection of Action Research as a suitable methodology. Finally, I will describe the design of and the method for the first cycle of Action Research.

3.1 The Research Aims

I have continued to work in the school while simultaneously exploring and probing the literature, and my understanding of the complexity of the issues has deepened. The relationships between various stakeholders, and the influence of key stakeholders, particularly instrumental teachers, parents and peers (2.2.5, 2.2.6, 2.2.7) has become clearer.

It has also become clear that increasing key stakeholder awareness of, and knowledge about, risk factors for playing-related musculoskeletal disorders (2.2.3) needs to be a primary objective of this thesis, with the expectation that the more stakeholders who are informed about risk factors for injury, the greater the awareness of those risk factors will be. The consequential hope being that key stakeholders will be able to promote and encourage a change in risk taking behaviour. Promoting change is undoubtedly complex and Michael Fullan hints at the social component of this this when he describes educational change as

> 'technically simple and socially complex'
>
> (Wise, Bradshaw, & Cartwright, 2013 p.111).

The topic of the researcher acting as an 'agent for change' is explored in depth in section 3.3.2. The notions of the significance of the stakeholders, the anticipated benefit of increasing their awareness of risk factors for playing-related musculoskeletal disorders, and the subsequent potential for change in risk taking behaviour were developed into early version of the research questions (2.3) and have been formalised into the following research aims.

This research aims to

i) increase key stakeholder-awareness of risk factors for playing-related musculoskeletal disorders in young musicians

ii) engage key stakeholders in change behaviour to promote practices that place pupils at less risk for playing-related musculoskeletal disorders

3.2 Methodological Considerations

In the next section I will explore issues and considerations around selecting an appropriate methodology to address these aims, before detailing the methods to be used.

3.2.1 Ontology

Ontology is the study of 'what is....?' or 'what constitutes reality....?' It is the philosophy concerned with the existence of and the relationship between different aspects of society, such as social actors, cultural norms, social structures and common realities (Wilson, 2009) and is concerned with the kinds of things that exist within society.

Ontology can be broadly understood as extending along a continuum between objective, which sees the world as fixed and with no scope for interpretation or contextualisation, and social-constructivist, which views the world as subjective and open to interpretation (Opie, 2004).

I will explain these two positions through my understanding and experiences as a clinical physiotherapist. When assessing patients, we record both objective data and subjective data. Objective data includes factual measurements such as the range of movement available at a joint, or leg length, or lung capacity, or muscle strength, or patient weight or height. These measurements can be reliably repeatable by any competent physiotherapist and do not require any subjective interpretation.

Objective data does not necessarily give an accurate indication of a patients' current functional capability (what someone can actually do), nor can they be used as a predictor of functional outcome or eventual recovery. The functional capability depends on a wide variety of much more subjective constructs such as cultural models of health (or illness) behaviour and beliefs, pain tolerance, emotional fortitude, personality traits, expectations and even factors such as pending litigation.

Acknowledgment of the critical involvement and influence of subjective, and often uncontrollable factors in the outcome of any clinical intervention has helped me to develop as an habitually creative, reflective (Schon, 1995), reflexive, empathic, and holistic practitioner: approaching each situation with eyes and mind wide open mind, not making assumptions from objective information, but attempting to look at each situation with an awareness of the patients' perspective, beliefs, expectations, frame of reference, mood and wishes. It is these

factors in combination with therapeutic intervention which influence the clinical outcome for any patient.

As a result of my clinical experience, I work professionally with a subjective and constructionist ontology. This stance is reinforced as a keen amateur musician (1.1.4) and as an insider-researcher-practitioner (1.1.3, 3.3.1). I will be looking to address research questions from a subjective ontology. This is important because of the subjective nature surrounding many of the key issues: for example, within the school, there are likely to be as many perceived realities of any particular situation, or answers to any specific question, as there are stakeholders. One simple example of this phenomenon is the broad range of answers that undoubtedly would be given if you sought opinions from pupils, parents, instrumental teachers, academic teachers, PE staff, boarding house staff, and health centre staff on these two simple questions:

'How many hours of instrument practise each week is enough?'
'How many hours of exercise should each pupil do every week?'

There is no one answer that would be right |or wrong to these questions. An understanding of the context to the answer (such as who is providing the answer) will furnish the enquirer with the most information. This knowledge will be important throughout the research process while working with multiple stakeholders, each, potentially with a different perspective.

3.2.2 Epistemology

Epistemology is the philosophy dealing with the nature of knowledge (Hamlyn, 1995), how we know what we know, and how we know that any knowledge that we acquire is valid and true (Newby, 2010). Epistemology can be viewed along the same objective-to-subjective continuum as ontology. For example, our epistemological assumptions influence how we know 'what is?' and affect how we think about the nature of reality and about the nature of things. What we see depends not only on what we look at, but also what our unique previous visual-conceptual experiences have taught us to see (Kuhn, 1972). This is commonly described as our frame of reference. Unique to each of us, our frame of reference influences our epistemological stance, and Crotty highlights the need to justify the epistemological stance that we take and the epistemological assumptions that we make in our

approach to research because it so strongly influences not only how we go about our research, but also how we present our findings (Crotty, 1998).

Within the framework of this research project, I am setting out to initiate a change and to substantiate and communicate my findings with a view to informing practice and driving further change. My epistemological stance is experiential and subjective and this aligns with my ontological stance. An experiential, subjective epistemology presupposes that all understanding of action or behaviour is affected by the context in which the action occurs: my own frame of reference relating to the issue of playing-related musculoskeletal disorders in pupils at the school informs me that these, with relatively small changes in behaviour, are largely preventable. In contrast, some instrumental teachers, parents and pupils indicate that they believe that playing-related aches and pains are an inevitable and normal state or condition for an instrumental musician (Ackermann, 2013). I do not agree.

3.2.3 Educational Philosophy

Educational philosophy is the lens through which we understand education practise (Newby, 2010). With a subjective ontology and epistemology, the lens through which I seek to understand educational practise is post-positivist and aligns with my subjective ontology and epistemology in that

- all analysis and explanation is based on the assumptions that the world is multi-layered and that people and organisations can play several, sometimes conflicting roles,
- this study is framed within a particular situation and a specific location,
- I aim to assemble information in order to describe and understand the situation that actually exists at the school, rather than what exists in an ideal situation, and I aim to help those who are the subjects of the research topic and the research process to engage in changes in behaviour that will result in a reduction in the incidence of playing-related musculoskeletal disorders seen at the school,
- knowledge creates privilege and this should be shared with those that might benefit. (Newby, 2010). In terms of this study, it is anticipated that the pupils at the school will be the major and immediate beneficiaries, but it is anticipated that pupils at other specialist music schools and junior conservatoires will benefit as information is disseminated.

3.2.4 Research Paradigm

A paradigm is a shared belief system, or a common way of looking at or researching phenomena (Cohen, Manion, & Morrison, 2011), that guides the way we do things, guides how we make decisions, and guides how we proceed with research in a way that is accepted by others working in the field (Newby, 2010). Adopting a particular paradigm determines all subsequent research procedures (Newby, 2010). Most educational research fits within two general paradigms (Wilson, 2009): positivistic, nomothetic and confirmatory, or interpretivistic, idiographic and discovery. The majority of medical and physiotherapy research fits within a positivistic paradigm. However, this research is post-positivistic and interpretivistic, and so coming from a profession where the research history is predominantly positivisitic, it is an example of the 'field-crossing' nature of what I am doing.

3.2.4.1 Positivism in Medical and Physiotherapy Research

Positivistic research is usually taken as a synonym for 'scientific'. Positivistic research works on the belief that it is possible to find absolute knowledge and sets out to confirm pre-determined hypotheses. This aligns with objective ontology and epistemology (Pring, 2000).

Research methods in this paradigm are highly objective, and once an experiment has been designed, there is good inter-rater reliability and researchers can be interchangeable. Significantly, the researcher does not influence the results of the experiment. Examples of 'gold-standard' or 'ideal' methods that are strongly positivistic are randomised controlled experiments or field trials. The majority of clinical research in medicine and in physiotherapy is undertaken using this strongly positivistic approach as it provides answers to questions concerning, for example, dosage of medicine.

3.2.4.2 Post-positivism in Social, Educational and Health Research

However, objective, scientific, randomised controlled experiments are not useful for trying to make sense of phenomenon or situations such as within a classroom setting, where there are many naturally occurring, uncontrollable variables, and where subjectivity of the researcher and the researched influences the interpretation of any findings (Pring, 2000).

Positivism is no longer widely regarded as a viable philosophical underpinning for social research (Robson, 2002), and it would not be useful for the setting of this study. As a result of acknowledging and addressing the limits and criticisms made of positivism in terms

of its ability to study phenomena and to compare situations where there is little scientific control, post-positivism has emerged as a paradigm with a broader more integrated approach: post-positivism acknowledges that although there is a commitment to objectivity, the theories, hypotheses, background, knowledge, limitations and values of the researcher influence what is observed (Reichardt & Rallis, 1994 in Robson, 2002).

This study is taking place within a setting where there are a large number of uncontrollable variables, and as an insider practitioner researcher I have direct influence over what I look at, what I look for, how I look at it, and most importantly, as I am trying to initiate and influence a change, I will have a direct influence on what happens during the research process.

Post-positivism aligns with my subjective ontology and epistemology and is the research paradigm of this study.

To summarise, this thesis is situated within a post-positivist, interpretive, qualitative paradigm, embodying and embracing the following characteristics:

- As an insider-researching practitioner I am inhabiting the world that I am researching.
- I am seeking not just to observe a situation but am seeking to initiate a change that I consider to be important, valuable, morally & ethically right and long overdue: I am NOT neutral and am NOT unbiased.
- Data used in this research will be largely qualitative in nature, rather than quantitative, and a variety of sources of information will be considered as potentially valuable data.
- Analysis of information will be interpretivistic.
- I am interacting with the participants and will therefore influence the result

(adapted from Newby, 2014 p.41).

3.2.5 Ethical Considerations

Research is fundamentally important to the well-being, development and progress of any profession and it is essential to those client groups being served by professions. Useful and beneficial outcomes from research are achieved by careful consideration of methodology and subsequent application of appropriate methods. Throughout this process, from deciding on strategy, while collecting, handling, analysing and storing data, and while preparing findings for presentation, there must be an overt awareness of, and explicit adherence to ethical principles (Denscombe, 2010).

Succinctly summarised by Mathison, Ross & Cornett as 'how to do good and act right', ethics is the branch of philosophy that deals with decisions about right and wrong actions (Zeni, 2001). This piece of work is fundamentally involved with children and their health and wellbeing and Grieg et al., (2013) remind us that ethical considerations become even more important when working with children because they may be particularly vulnerable to being misled or exploited by over-zealous researchers. When planning and participating in research which involves children, particular consideration and attention must therefore be given not only to our responsibilities as researchers to the research process, but also to our responsibilities as adults in positions of trust to care for children.

A useful initial point of reference is to be mindful of four commonly held ethical principles identified and summarised by Grieg et al, as autonomy, non-maleficence (to do no harm), beneficence (to do good) and justice (Grieg et al., 2013). These broadly cover the ethical mandate familiar to healthcare providers of 'before whatever else we should do no harm to others' (Su & McGettrick, 2012). While this mandate is clearly 'good' and 'right', it does not, for the purposes of this piece of work, provide sufficient detail.

The social relationships and power relationships within the school are complex and are to some extent porous and fluid as people shift between different roles in different situations. This is discussed in more detail in section 3.3.3. For example, some of my relationships with colleagues at the school are long established. They perceive my established role as a physiotherapist in a very specific way. Wearing my newer 'hat' as a researcher may conceivably change these relationships as colleagues may perceive some threat from, or mystery about, the research process. Peter Newby warns of the risk of alienating colleagues if they feel that their practises may be scrutinised and judged during the research process. Change (or its anticipation) can induce intense feelings of anger, anxiety and vulnerability (Newby, 2010), all of which have the potential to generate tension and alter working relationships. However, we are reminded that teaching and education is a 'moral' profession and that working with this philosophy makes it easier to make decisions about how to behave: 'Caring teachers have no ethical option but to do the right thing' (Zeni, 2001).

To try and ensure that established trust between me and the participant stakeholders is maintained during this project, I intend to proceed with a policy of openness, proactive communication and transparency about my own position and interests within the research setting, about the background to the study, about the research process, about how data will be

gathered, handled, analysed and stored, and about how any findings will be disseminated. This will involve regular general updates to pupils, parents and staff via the weekly school bulletin, with specific and detailed information for, and communication with, those involved in particular projects at specific times. Marion Mohr advocates that using Action Research as a tool requires a process of regular ethical review, with overt ethical checks planned at different points in the research process. This is a piece of Action Research, and details of the decision making process leading to the selection of this research strategy is detailed in section 3.4, and it is intended that the planned transparency, openness and proactive communication in conjunction with the variety of projects that will be run, will ensure that ethical principles are maintained throughout the entire process (Zeni, 2001).

Participants in particular projects will be fully informed of what the project involves, what their own role within it requires, and how the results are likely to be published in the public domain. It is intended that pupils will benefit from the research, and it is likely that the findings will be of interest to wider communities of music educators, and to those working within the fields of performing arts medicine, physiotherapy and occupational health. Because of this it is appropriate to consider at this point and plan ahead for the likelihood that findings will be disseminated via publication in peer reviewed journals and by presentations at conferences (Newby, 2010).

Full and open explanations of the entire process will be given verbally, and in writing, in order that each participant can give voluntary and informed written consent to participate. An example consent form used at the school, along with the Faculty of Education Ethics Approval Form can be found in Appendix C. Each participants' individual right to privacy, anonymity and their freedom to withdraw without negative effect will be explained at each point of contact.

All of these processes align with and ensure compliance with ethical guidelines for educational research produced by the British Educational Research Association (BERA), (2011). The preamble to the extensive guidelines states:

> 'The underpinning aim of the guidelines is to enable educational researchers to weigh up all aspects of the process of conducting educational research within any given context (from student research projects to large-scale funded projects) and to reach an ethically acceptable position in which their actions are considered justifiable and sound'
>
> (British Educational Research Association, 2011, p.4)

The guidelines are comprehensively organised under four main headings, outlining the responsibilities that educational researchers have to the communities that they serve: responsibilities to participants, responsibilities to sponsors of research, responsibilities to the community of educational researchers and responsibilities to educational professionals, policy makers and the general public.

The policy of openness, proactive communication and transparency to be used throughout this research process is designed to directly address the 'ethic of respect for any persons involved in the research', and I overtly acknowledge my intention to complete this research with full and ethical respect for everyone participating in it. Details of ethical considerations specifically relating to insider researchers can be found in section 3.3.5.5.

3.2.6 Ensuring Validity via The Trustworthiness Framework

Researchers using a positivistic paradigm and carrying out quantitative research are mindful that their research is assessed for rigor using five criteria: its internal validity, it's external validity (or generalisability), it's reliability, its objectivity, and its accuracy.

Historically, the trustworthiness of qualitative data has been questioned and, on occasions, ridiculed by positivist researchers using the scientific method, because methodologies typically employed within qualitative research do not produce data that can be readily assessed by those five criteria. Resultantly, qualitative research has been seen by positivists as invalid, unreliable and subjective.

With the emergence of qualitative methodologies within the fields of social science and educational research, the need to ensure rigor of qualitative research also emerged. Guba (1981) and Lincoln & Guba, (1985) developed the concept of trustworthiness, and formulated a framework to systematically evaluate qualitative data. The original 'trustworthiness framework' comprised the four elements of credibility, dependability, transferability, and confirmability. Since 2011 a fifth element, 'authenticity' was added (Polit & Beck, 2011). There have been attempts to compare the elements of the trustworthiness framework with the criteria used to assess quantitative research (Billups, 2014). I have combined these comparisons (Guba, 1981), with suggestions of possible strategies that qualitative researchers can use to address 'criteria for trustworthiness' (Shenton, 2004), and shown where specific examples of these strategies were used in this research.

This is shown in Table 3.1.

Table 3.1 The Trustworthiness Framework: Comparisons to Quantitative Criteria, Possible Strategies that can be used by Qualitative Researchers, and examples of Actual Strategies that have been used in this Research.

Quantitative Criteria	Qualitative Element	Translation	Essential Questions	Possible strategies that can be made by the researcher (Shenton 2004), Actual strategies used in this research, Reference to the Trustworthiness Framework within the Thesis
Validity	Credibility	Truth	Are results believable? Do they appear truthful?	Description of background, qualifications and experience of the researcher: (1.1 pp3-6, 4.1 p73) (1.1 p3 last sentence, 4.1 p92 second full paragraph) Peer scrutiny of project: the project was scrutinised through formal and informal mechanisms and processes by: the school nurse, Performing Arts Medicine and Physiotherapy colleagues (Appendix A), EdD colleagues, staff and supervisor (1.5, penultimate paragraph, p20). Development of early familiarity of culture of participating organisation: having worked at the school since 2008, I am familiar with aspects of the culture of the school (1.2 pp6-16, 1.3 pp16-17 and 1.4 pp17-19), and the culture of western classical music (2.2). (2.3 paragraph 1, p52). Adoption of appropriate, well recognised research methods: Action Research is a well-recognised qualitative methodology for initiating and promoting change (3.4) (3.5 Methodology and Design Summary- penultimate paragraph p79) Tactics to help ensure honesty in informants: the focus group meeting participants were volunteers, and the comfort and familiarity of the setting, along with the conversational nature of the meetings was intended to encouraged honesty and openness (4.5.4) (section 4.5.4 paragraph 1, p119 Triangulation via use of different method, different types of informants and different sites: Focus group meetings (4.5.1) and surveys (4.7) used a number of key stake holders, at different times (5.5.1 and 5.5.3), which served to triangulate the findings (4.5.1 p114 first sentence, and 5.5.1, p206, second full paragraph) Iterative questioning in data collection dialogues: The same script was used for all the focus group meetings, and the surveys asked the same questions to key stakeholder groups and also repeated the same questions at two different points in time. Examination of previous research to frame findings: this was evidenced in the review of literatures (Chapter Two and 5.5.3.5). (5.5.3.5, p222 first paragraph) Negative case analysis. Random sampling of individuals serving as informants. Debriefing sessions between researcher and superiors. Use of 'reflective commentary'. Thick Description of phenomenon under scrutiny.
Reliability	Dependability	Replicable	Are results consistent over time?	In depth methodological description of to allow study to be repeated. See sections 3.5, 4.5.4, and 4.7.1. (final sentence of 4.7.1 on p146) Employment of overlapping methods. Health Promotion Activities, Focus Group Meetings and Surveys in the first cycle of Action Research. See section 4.9 page 167), and repetition of surveys repeated in the second cycle (p222, and Sections 5.5.1 and 5.5.3).
Gereral iz-ability	Transferability	Applicable	Are the results applicable to similar settings?	Provision of background data to establish context of study and detailed description of phenomenon in question to allow comparisons to be made: the provision of detailed information about the research setting (1,2 pp6-16), and baseline data about playing-related injuries at the school (1.4 and 4.1.1). See 1.6 p21 second paragraph.
Objectivity	Confirmability	Neutrality	Corroborated through triangulation?	In-depth methodological description to allow integrity of research results to be scrutinised. See sections 4.4, 4,5, 4.7.4 and 4.7.8, 5.4, Triangulation to reduce effect of investigators bias: by gaining information & opinions from multiple stakeholder groups (see section 4.5.2) Admission of researchers' beliefs and assumptions: See 1.1 and 3.3.5.4 (3.3.5.4 second sentence p 72) Recognition of shortcomings in study's methods and their potential effects: See section 7.2.2 Use of diagrams to demonstrate "audit trail'
Accuracy	Authenticity	Reality(ies)	Are all 'realities' represented?	Through inclusion of multiple stakeholders (section .2.2, 6, 2.2.7, 4.4.3, 4.5.2) (Section 4.5.2 p114 point e)

It must be noted that the criteria used in quantitative research and the terms used in the trustworthiness framework cannot be matched exactly. They are best thought of as concepts that are "broadly transferable within the research paradigms"

(Billups, 2014 p.1).

It is also worth noting and remembering that analysis in qualitative research is dependent on the frame of reference, beliefs and experiences of the researcher (3.2.2).

The trustworthiness framework provides an alternative set of elements or criteria that can be used to ensure that qualitative research can confidently be viewed as having comparable academic rigor to quantitative research. In this section I have introduced the trustworthiness framework, compared the elements within it to the criteria used to assess quantitative research, and provided a list of possible strategies that qualitative researchers can employ to help ensure that they are meeting the demands and rigors of the trustworthiness framework. Table 3.1 shows possible strategies that can be made by the researcher (Shenton 2004), actual strategies used in this research, and where the Trustworthiness Framework is referred to the in the thesis.

3.3 The Researching Professional: Insider Researchers and Change Agents

In the first two sections I will provide definitions of both Insider Researchers and Change Agents before talking about specific issues that arise both from these roles, and in relation to this research process. I am going to look at the key differences between insider and outsider researchers and identify the hallmarks of research projects carried out by insider researchers. I will then talk about the social complexity of the insider researcher role before discussing some of the issues around acting as an insider-researcher and change agent.

3.3.1 Insider Researchers

The term 'insider researcher' is used by Mark Sherry (in Given, 2008) to describe the scenario where the researcher works within, and is a part of the topic being investigated. Insider researchers have a unique view of the research setting and also of research findings, and typically, they see the setting of the research in very personal terms, such as those of economic security, social affiliations, self-esteem and fulfilment (Bartunek & Reis Louis, 1996). An outsider researcher, typically has no direct affiliation to the research setting, remains a detached onlooker, and is a non-participant in the social world being studied (Bartunek & Reis Louis, 1996).

Research projects, such as this one, carried out by insider researchers, are often initiated because the researcher (like me) is motivated enough by their experience and understanding of a situation, that they have made a value judgment about it, leading either to a drive to explore or examine the situation in more depth, or to want to change it.

3.3.2 Change Agents

A change agent has been defined as anyone who has the skill and power to stimulate, facilitate, and coordinate a change effort (Lunenburg, 2010) and may be either external or internal to the organisation. The success of any change effort depends heavily on the quality and workability of the relationship between the change agent and the key decision makers within the organization (Lunenburg, 2010).

My role is as a researching professional and change agent within the school, and the relationships that I nurture and maintain with key stakeholders will influence the degree of success, or the extent of change. Certain characteristics in how the agent manages the change process can dictate the success or otherwise of the change (Lunenburg, 2010). These characteristics are: hemophily (how alike the change agent and the stakeholders are), empathy, linkage (the extent that the change agent and the stakeholders are tied though collaborative activities), proximity (describing the physical and psychological closeness of the change agent and the stakeholders), structuring (clear planning and structuring of change activities) capacity (the company's capability of providing the resources needed for a successful change effort) and openness (the degree to which the change agent and organization members are willing to hear, respond to, and be influenced by one another).

My success or not, as a change agent, will depend on how I manage change in relation to these characteristics.

3.3.3 Stakeholders, Social Complexity and the Insider Researcher

This project necessarily involves a number of stakeholders particular to this type of specialist music school. Figure 4.2 illustrates these stakeholders and the resultant social complexity within the school. This social complexity adds to the already complex process of eliciting change in human behaviour. Michael Fullan describes educational change as

> 'technically simple and socially complex'
>
> (Wise, Bradshaw, & Cartwright, 2013 p.111).

This complexity derives from the nature of the social process of working with a group. The school is already a socially complex community. This complexity will be compounded further by attempting to put into practice 'change'. Change is a process that arouses emotions, and often produces a natural response of resistance, tension and conflict (Bennett, Crawford, & Cartwright, 2003). This is important to consider because the changes needed at the school to reduce the incidence of playing-related injuries and to improve well-being in the pupils, will be challenging hundreds of years of orthodoxy in classical music instrument teaching: that it is somehow acceptable, and perhaps even necessary, that performers suffer for their art.

The school is socially complex with a large number of stakeholders. All stakeholders are clear that these pupils are gifted and talented musicians, but tensions can arise between stakeholders over how this talent is best managed and developed whilst simultaneously caring for the development of the whole child. For example, instrumental music lessons are timetabled throughout the school day and take priority over academic lessons. Performance opportunities such as concerts outside of the school, also take priority over academic lessons. Through conversations with colleagues, it is clear that this can be a source of tension, particularly during times such as during preparation for GCSE exams. The social complexity at the school, with the pupils absolutely centrally located, and my location as an insider researcher and physiotherapy practitioner are illustrated in Figure 3.1. on p.68.

3.3.4 The Need for Change

Although there is a clearly identified need for change in terms of how pupils are looked after and how they look after themselves, in order to avoid preventable playing-related musculoskeletal disorders, the importance of any need is always relative to other competing needs at any given time, and this will have an impact on the willingness of stakeholders to make change (Fullan in Wise et al., 2013). Within the school, perceptions of the importance of particular needs, and therefore the prioritisation of particular needs varies between different stakeholders and alters at different times through the academic year. For example, during the school holidays the parents may become more influential on a pupils' practise patterns than during term time, while the academic teachers become more important for pupils as they prepare for public exams such as GCSEs and A levels. Practise may be perceived as more important than homework when a pupil is preparing for an audition or a performance.

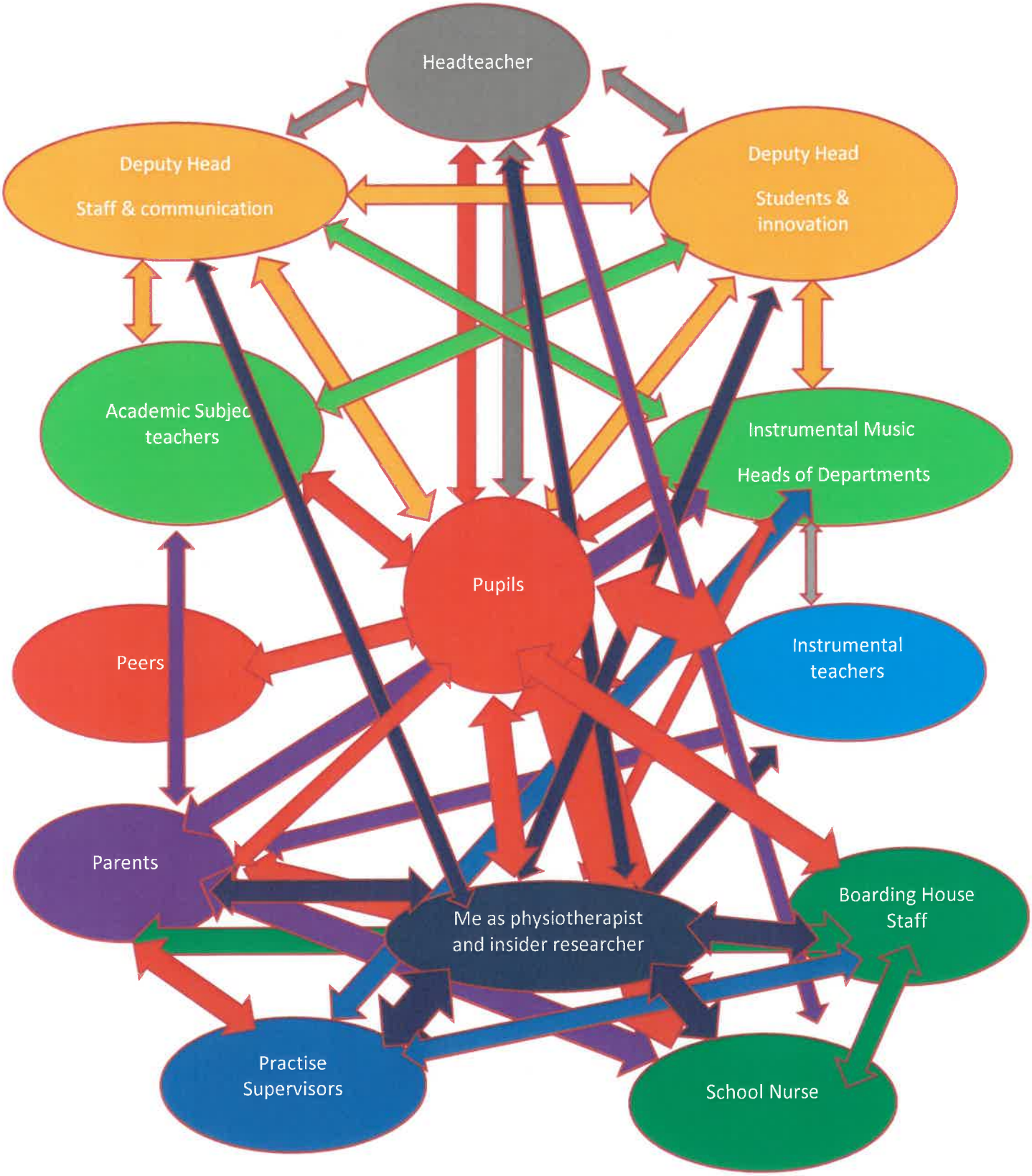


Figure 3.1 The Social Complexity at the School.

3.3.5 Specific implications and issues arising from working as a change agent and insider researcher.

As the school physiotherapist and a researching professional, I am working as an insider researcher with the intention of making a change. Compared to outsider researchers who have no formal role within the organisation nor within the process being researched, and who are often able to take an objective look at a particular issue, insider researchers uniquely hold simultaneous roles both within the process of the research, and also within the project being researched (Newby, 2014). In the next section I will explore some specific features unique to research involving insider researchers.

3.3.5.1 Pre-Understanding

Pre-understanding is a technical term used in theology and philosophy of language to refer to what we unreflectively bring with us to any situation. The insider researcher role comes with unique pre-understanding of the situation being researched and of the location of the research. Pre-understanding includes both explicit experiential knowledge, which is the result of a naturalistic, ongoing process of direct learning from life experiences (Kolb, 2015), and tacit knowledge, defined by Collins (2010) as knowledge that is not explicated. An example of tacit knowledge that I have from working within the school is an awareness and understanding of the tensions arising for academic staff when instrumental lessons or performance opportunities are timetabled during academic lessons, particularly when pupils are preparing for academic exams.

The roles of the insider researcher practitioner means that there is a significant quantity of both tacit and experiential knowledge about the setting within which the research is to happen (the school) and issues surrounding the research questions, which an outsider researcher would not have (Reed & Proctor, 1995).

Personal experiences, combined with knowledge of their own job, and an understanding of the systems operating within their own workplace comprise an advantageous, distinctive and unique pre-understanding for insider researcher (Coghlan & Branick, 2104). In this study, my pre-understanding about the school includes insights such as the effect of particular demands placed on pupils at certain times of the year, for example when preparing for auditions, recitals, exam, competitions or assessments: at these times, the drive to practise their instruments for protracted periods of time can be so strong that they are willing to risk injury from excessive playing. In my case, this is knowledge formed as a

combined result of treating instrumentalists injured through such over-practising, and from tacit knowledge of systems and processes within the school and within the wider world of professional music making.

3.3.5.2 Insider or Outsider?

Insider researchers can be effective leaders of change in institutions where they are regarded with trust and credibility by various staffroom sub-cultures. They must be able to concurrently maintain a connectedness with the organisations cultures and sub-cultures and hold an 'outward' focus on the research process (Miller, 2002). These cultures and subcultures undoubtedly exist within and between the complex network of relationships between the numerous stakeholders within the school (previously illustrated in Figure 3.2).

My unique role as physiotherapist means that I am not a member of the academic teaching team, nor a member of the music department and I might be considered to be an outsider to these two particular groups, but my involvement with health provision at the school and my close working relationship with the school nurse, the school counsellor and the Boarding House Staff, ensures that I feel like an insider within the overall organisation, and particularly as an insider in the part of the organisation dealing with health and welfare of pupils. It is possible that other staff members could describe me as an 'outsider-insider', if they consider health and wellbeing of pupils to be a more marginal function of the school. In participatory Action Research, the insider researcher can give themselves critical distance by moving between two thought positions: that of the insider (where they have an intimate, detailed knowledge and understanding of the environment, relationships and practices being researched), and that of the outsider who does not share the partiality of the insider. This critical distance

> 'provides the seed of the critical perspective that allows insiders to consider the possible as well as the actual in their social world'
>
> (Kemmis & McTaggart in Denzin & Lincoln, 2000 p.590).

The non-fixed positioning of the insider/outsider is expounded by Dwyer & Buckle (2009), who propose that the issue of being an insider or an outsider is more complex than a straightforward dichotomy. They suggest that qualitative researchers need not be fixed in their positioning: they can be either insiders or outsiders or they can move between the two. They consider that there is the potential for a space between the two poles of insider or

outsider. This model of non-fixed positioning is a useful way of considering my position and location within the social complexity at the school, giving the option of movement and fluidity between roles, and allowing some staff to consider me as an outsider while others concurrently, can consider me to be an insider.

3.3.5.3 Role Conflict

Role conflict describes the situation that occurs when there are incompatible demands placed upon an employee such that compliance with all demands would be difficult (Katz and Kahn, 1978). The duality of roles between my pre-established role as physiotherapist within the organisation and my newer role as a researcher could potentially be a source of tensions, dilemmas and role conflict. Flutter (Burnard et al., 2016) draws on the theoretical framework of Bourdieu to explain tensions and contradictions which can arise, and which may impact on socialised norms, and guide behaviour and thinking when working simultaneously in the two distinctive fields of professional practice and academic research.

As I am unwilling to accept the current paradigm at the school, where I believe we are not taking reasonable steps to ensure pupils do not develop playing-related musculoskeletal disorders injuries, I am attempting, through becoming an insider practitioner researcher, to implement a paradigm shift. Inevitably there is likely to be resistance to change, tension and possibly even conflict. Macionis & Gerber (2010) summarise that we are likely to experience role conflict when we find ourselves pulled in various directions as we try to respond to the many statuses or roles that we hold.

In extreme situations role conflict can lead to can lead to a feeling of role detachment where the researcher begins to feel like an outsider in both roles (Adler & Adler, 1987). It is entirely possible that there will be times during this research journey when I may feel more like an insider and times when I may feel more like an outsider. In an attempt to display and maintain a feeling of 'insider-ness', I intend to communicate with the key stakeholder groups (parents & guardians, instrumental teachers, academic teachers, pupils, practise supervisors and boarding house staff) both informally, by taking every opportunity to nurture social relationships (for example during school meal times and breaks), and also in a more structured mechanism via the school bulletin, which is emailed to these groups on a weekly basis and contains news items from and about the school. An example of 'The Bulletin' can be found in Appendix C.

3.3.5.4 Avoiding Bias

Insider researchers must be particularly mindful of a potential for lack of impartiality or bias towards finding a particular result, or of verification bias because of the very subjective and intense nature of researching their own practice (Costley, Elliott, & Gibbs, 2010; Denzin & Lincoln, 2011)

To counter this, and to ensure that this thesis sits within the 'confirmability' or 'neutral' element of the trustworthiness framework (3.2.6 and Table 3.1) a number of recommended checks are built into the design:

- Throughout the thesis, I have been explicit about my stance as a physiotherapist who was deeply troubled by treating recurring injuries that seemed to be preventable. By explicitly stating my stance and acknowledging the values that underlie and underpin the research

  > "the readership or audience can have a clearer vision of the enterprise and can judge the results/analysis from an informed position"
  >
  > (Denscombe, 2002 p.167)

- Impartiality can be compromised and bias can be introduced when research is commercially sponsored (Denscombe, 2002). This thesis was funded by four different sources. However, none of the sources of funding for this thesis had any input into, nor influence over the development of the research questions, the research design, the analysis of the data, or the any of the writing. What is more, there is no commercial advantage or financial gain for any of the funders whatever the findings.

Deliberate reference to the trustworthiness framework aims to highlight instances when the possibility for bias has arisen and subsequently been acknowledged or ameliorated.

3.3.5.5 Ethical Considerations of the Insider Researcher

Ethical Considerations of qualitative research are considered in general terms in 3.2.5, but further unpacking, exploration, and understanding of ethical considerations in the context of working as an insider-practitioner-researcher with children is required. In this section I am going to comment on the specific ethical considerations for insider-researchers working with children. An insider-researcher has responsibilities and relationships that are fundamentally

different from those of an outsider-researcher looking in, and ethical decisions must be based on principles of responsibility and accountability to all involved. This should be reflected in the research approaches used, and the ethical considerations deployed during the entire research process (Zeni, 2001).

In practical terms, as an insider practitioner researcher the background to the situation being researched is well known, access to the pupils and staff is established and relationships have already been developed. Non-the-less, explicit consideration must be given to specific issues of gaining access to potential participants, their time (both in terms of amount and convenience), ethical sampling, providing information in format accessible to each participant, who will be a variety of ages, obtaining informed consent from participants, protection of anonymity from any data (including photographic, written or recorded), data collection, storage, handling and analysis, and a constant awareness and consideration of potential power differentials within the research relationship (Alderson & Morrow, 2011; Harcourt, Perry, & Waller, 2011; Holt & Walker, 2009; Reason, & Bradbury, 2001). Overt consideration of these factors ensures that the participants do not feel and are not exploited at any point in the research process.

Insider-researchers can benefit from the myriad network of relationships with a variety of stakeholders and participants involved in a project. Research findings can be deeply enriched by thoughtful, careful and considerate collaboration between researcher and participants. However, to preserve and nurture these relationships, overt care must be taken by the researcher to reassure stakeholders and participants of your loyalty to them, and your trustworthiness and your integrity both as a researcher and as a colleague (McNamee & Bridges, 2002; Zeni, 2001;).

3.3.6 Working as an Insider Researcher or Change Agent: conclusion

The duality of the insider researcher role, defined as a situation where the researcher is a part of the topic being investigated (M. Sherry, in Given, 2008) is complex and can produce painful tensions and difficult dilemmas. However, in this instance, the very nature of being an insider provides a truly unique insight and a deep understanding of the social complexity within the school, along with first hand 'coal-face' experience working with injured young musicians. This insider location is key to obtaining access to the different stakeholders, and in turn, this access will provide a breadth and depth of data on their feelings about and towards, and their particular knowledge and understanding of, risk factors for playing-related injury.

My role and stated bias, as a physiotherapist with knowledge and understanding of successful health promotion and injury prevention strategies in other clinical fields (such as occupational health, sports medicine and dance medicine) is the very trigger for undertaking this project.

3.4 Rationale for the Selection of Action Research as an Appropriate Methodology

There are several distinctive characteristic features of qualitative and quantitative research which are illustrated in Table 3.2. The characteristic features of this thesis, which directed me towards selecting a qualitative methodology are highlighted:

Table 3.2 Characteristic Features of Qualitative and Quantitative Research with the characteristics of this thesis high-lighted. Retrieved 16th Feb 2017 from http://wilderdom.com/research/QualitativeVersusQuantitativeResearch.html).

Qualitative	Quantitative
The aim is a complete, detailed description	The aim is to classify features, count them, & construct statistical models in an attempt to explain what is observed.
Researcher may only know roughly in advance what s/he is looking for.	Researcher know clearly in advance what s/he is looking for.
Recommended during earlier phases of research projects.	Recommended during later phases of research projects.
The design emerges as the study unfolds.	All aspects of the study are carefully designed before data is collected.
The researcher is the data gathering instrument.	Researcher uses tools such as questionnaires or equipment to gather numerical data.
Data is in the form of words, pictures or objects.	Data is in the form of numbers and statistics.
Subjective: individuals interpretation of events is important.	Objective: seeks precise measurement and analysis of target concepts.
Qualitative data is more 'rich', time consuming and is less able to be generalised.	Quantitative data is more efficient, able to test hypotheses, but may miss contextual detail.
Researcher tends to become subjectively immersed in the subject matter.	Researcher tends to remain objectively separated from the subject matter.

3.4.1 Action Research

In the next two sections, I present the characteristics and qualities of Action Research to explain how it aligns with a post-positivist research paradigm (see 3.2.4.2), and to justify why it was selected as the most appropriate methodology for this research.

3.4.1.1 Characteristics and Qualities of Action Research

Action Research is a qualitative strategy, rather than a method (Denscombe, 2010), that is well documented as being particularly suitable and successful where the intended outcome is to implement change, improve a situation or solve a practical problem rather than to generate new knowledge (Elliott, 1991). It is characterised by always being done by insiders within an organisation (Wilson, 2009). Action Research can be carried out within a variety of settings, exploring a variety of dimensions (including professional, personal and political) and with different researchers taking different stances. This can make Action Research somewhat of an 'umbrella term' rather than a fixed technique (Burnard, Apelgren, & Cabaroglu, 2015) which strengthens the descriptor of a strategy.

The historical and philosophical foundations of Action Research can be traced back to the 'Science in Education' movement of the late nineteenth century (McKernan, 1996). Action Research, however, is an evolving process and the origin of its recognisable cyclical form is widely regarded to be the work of Kurt Lewin (McKernan, 1996) through his post-second world war work in the group dynamics movement in social psychology and human relations training. He discussed the use of Action Research as a form of experimental enquiry based upon the study of groups who were themselves experiencing problems. Action Research is a strategy that has a track record of being successfully employed in music education research to promote change (Cain, 2008; Cain, 2012; Chadwick, 2015; Pulman, 2012).

Action Research operates within flexible cycles of enquiry, intervention and evaluation (Somekh, 2006), and the traditions and models of emancipatory and participatory Action Research (Wilson, 2009), along with the insider Action Research process, both mirror cyclical processes of experiencing, understanding, judging and acting (Coghlan & Branick, 2014). This cyclical process is also mirrored by health care professionals and teachers as reflective practitioners. The systematic nature and cyclical process of Action Research can turn 'experience into learning' (Burnard & Hennessy, 2006).

> 'Action research is founded on a research process in which research, action and evaluation are interlinked, and on a research relationship in which those involved are participants in the change process.
>
> (Hart & Bond, 1995, p.38.).

The process of reflection *on* action and reflection *in* action is familiar to me as a clinical physiotherapist and as an educational researcher. The ability to respond to information revealed during reflection, enables researchers using Action Research to be creative, and characterises Action Research itself as contextualised, flexible, illuminating (Macintyre, 2000), and professionally aligned to my practice. Additionally, these characteristics (and strengths) aligns Action Research with an educational philosophy and research paradigm that is post-positivist.

It is dependent upon the researcher being entirely participatory, and is often referred to as practitioner research (McNiff, 2013). It can employ multiple methods (Bowling, 1997) with the intention of bringing about improvement via involvement (Robson, 2002).

3.4.1.2 Justification of the Selection of Action Research as an Appropriate Methodology for this Research.

The first two years of the EdD provided taught sessions about research methodology, and by the end of the December 2012 I had selected Action Research as the strategy to use for this research when it became clear that

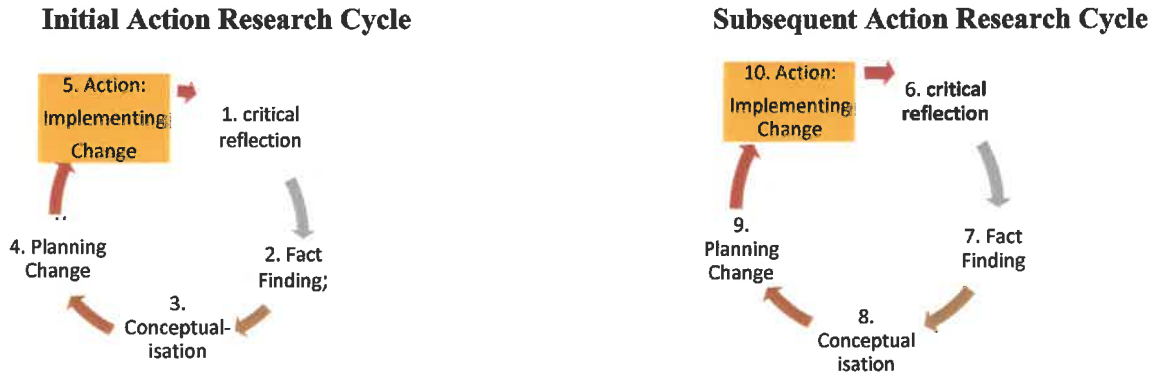
a) my project was about initiating change at the school,
b) I wanted to improve the situation at the school,
c) I was an insider researcher,
d) I had already identified the problem,
e) I had been gathering baseline data and had begun to understand and analyse the problem.

Action Research consists of a series of action cycles, which include

- a period of critical reflection to identify and analyse the problem,
- fact-finding,
- conceptualisation and strategic planning of change,
- implementation of change (the 'action' component),
- and re-evaluation of the problem (McKernan, 1996), which is considered to be the start of the subsequent cycle.

This cyclical process can run several times during the course of a research project or can run twice. In this research there was a very real constraint on time, and two cycles of

Action Research were planned and completed. The cyclical nature of the academic year lends itself to the cyclical nature of Action Research. The cyclical nature and the components of Action Research are shown in Figure 3.2.



(developed from Denscombe, 2010).

Figure 3.2 The Cyclical Nature and the Components of Action Research

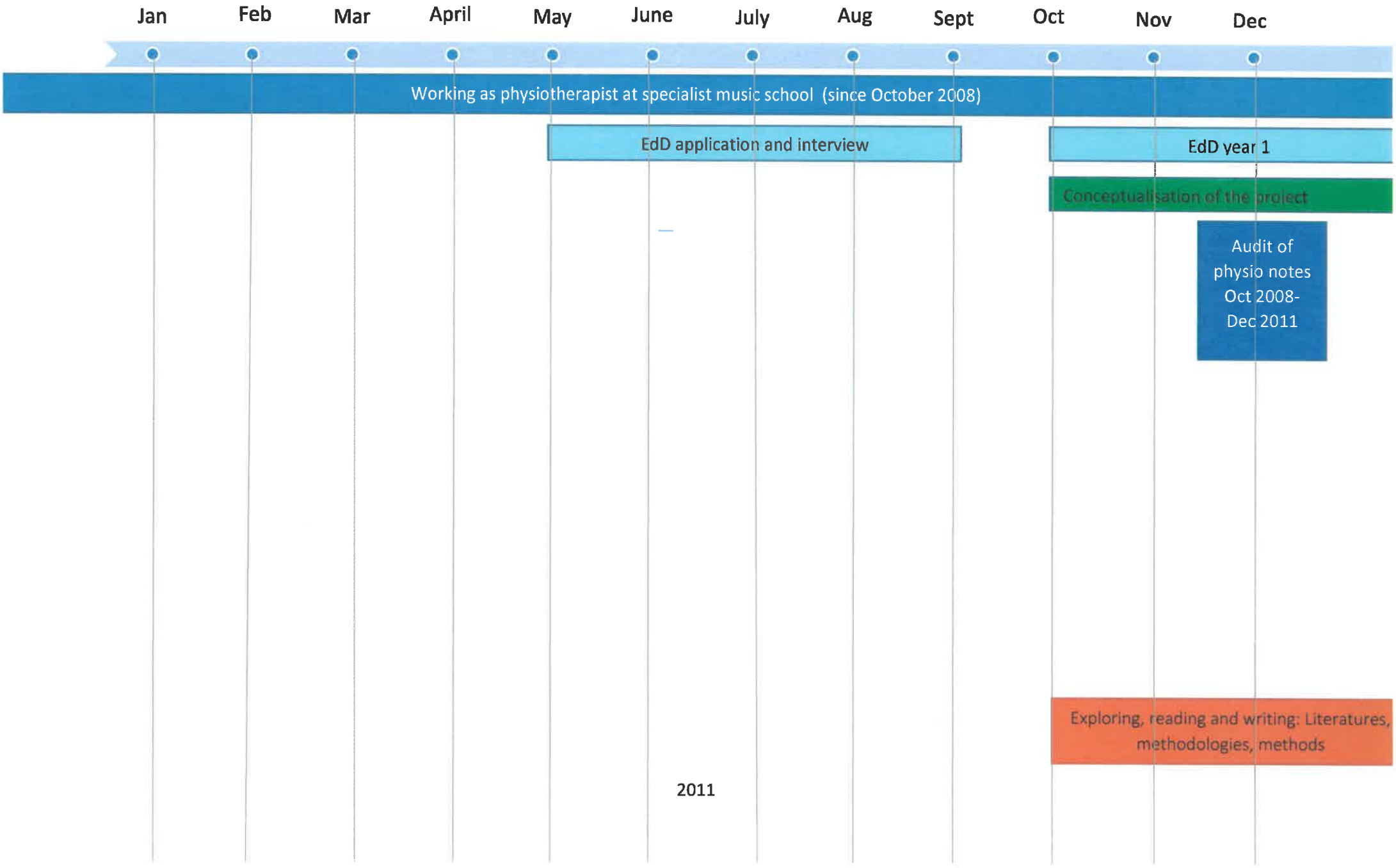
As an established staff member working closely with both pupils and staff, I am aware of the considerable influence I will have on the way the project runs, and also on the outcome. It will be necessary for me to be critically reflective throughout the process and also while analysing outcomes and disseminating findings (Freire, 2002; Hays & Singh, 2012).

I planned to use the Action Research cycles to uniquely combine and consolidate knowledge from the multiple fields of music education, physiotherapy, sports sciences and sports medicine, occupational health, and performing arts medicine, to initiate change which can then be used as a form of professional development (Elliott, 1991) and shared with music educators, instrumental teachers, performing arts medicine practitioners, occupational health practitioners, and other physiotherapists. In addition to the intention of implementing a change and improving a situation Action Research in this instance can be seen as a bridge between theory and practice (Holter & Schwartz-Barcott, 1993).

It is intended that all aspects of this project, from design and implementation, to presentation and dissemination of findings, will be accessible to music education practitioners, instrument teachers, physiotherapy practitioners, performing arts medicine practitioners and occupational health practitioners as well as to an academic readership.

A timeline tracking the process and events of the two Action Research cycles, and the writing of this thesis is provided in Figure 3.3.

FIGURE 3.3 TIMELINE OF THIS ACTION RESEARCH PROJECT



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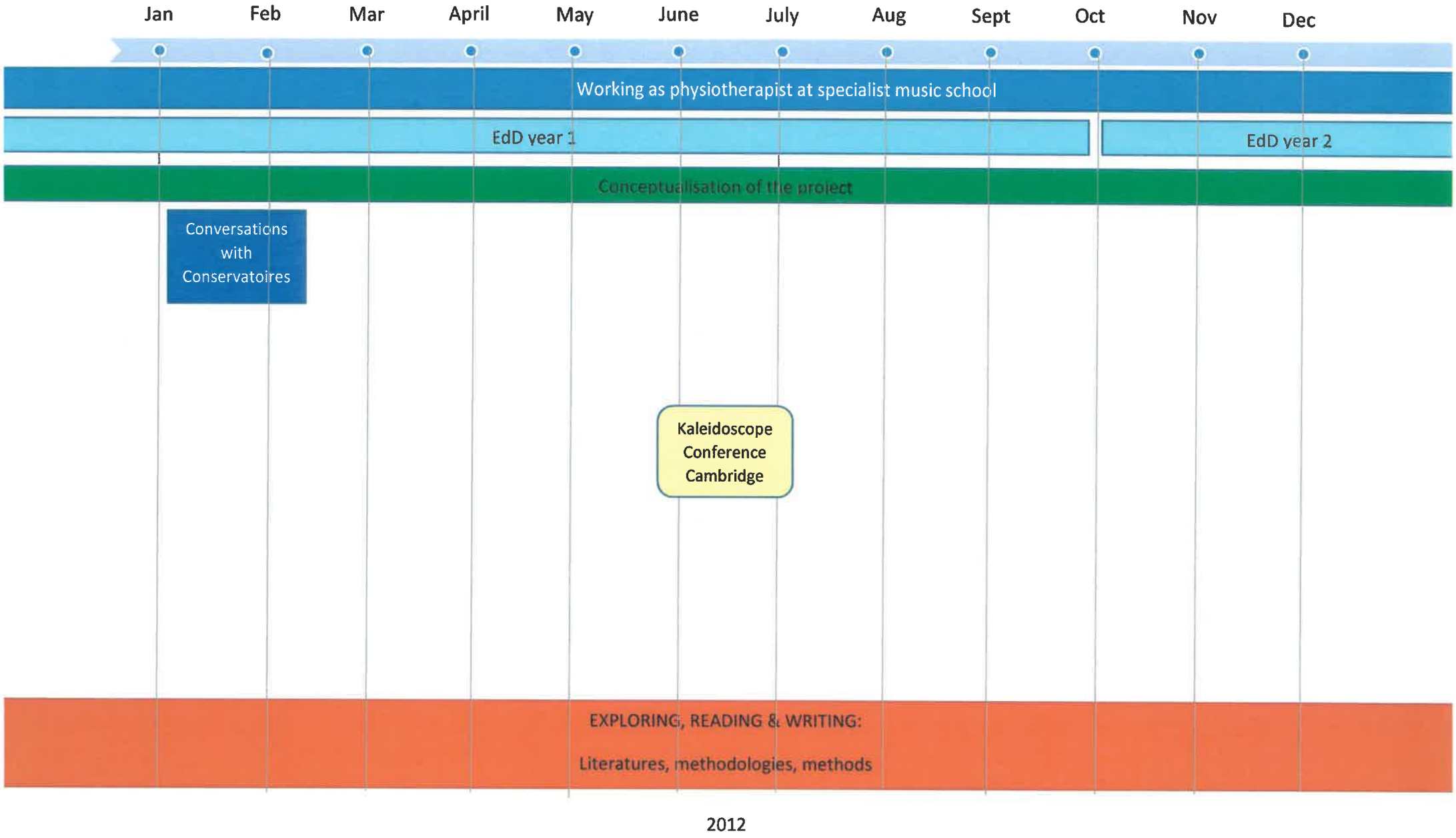

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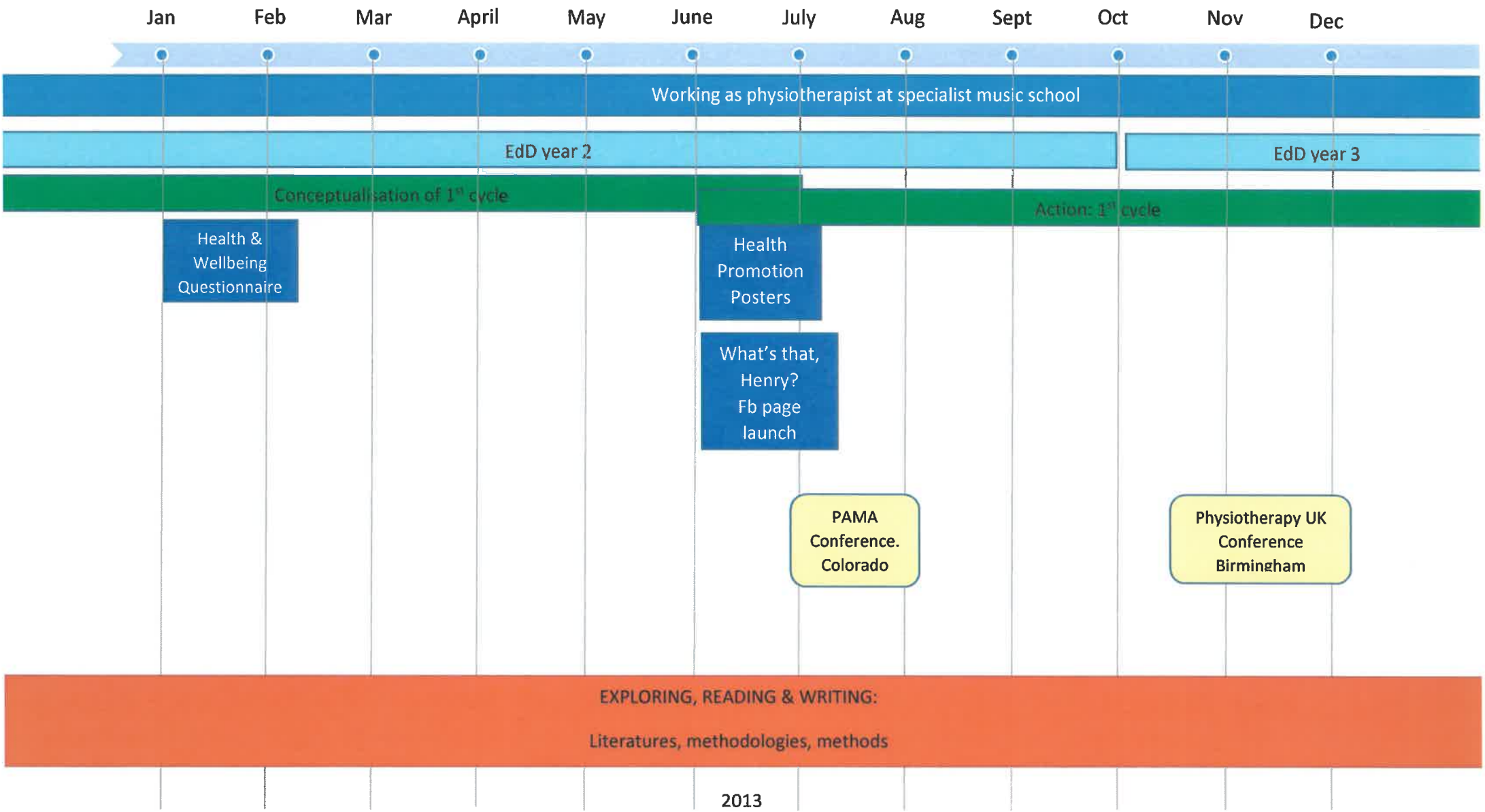

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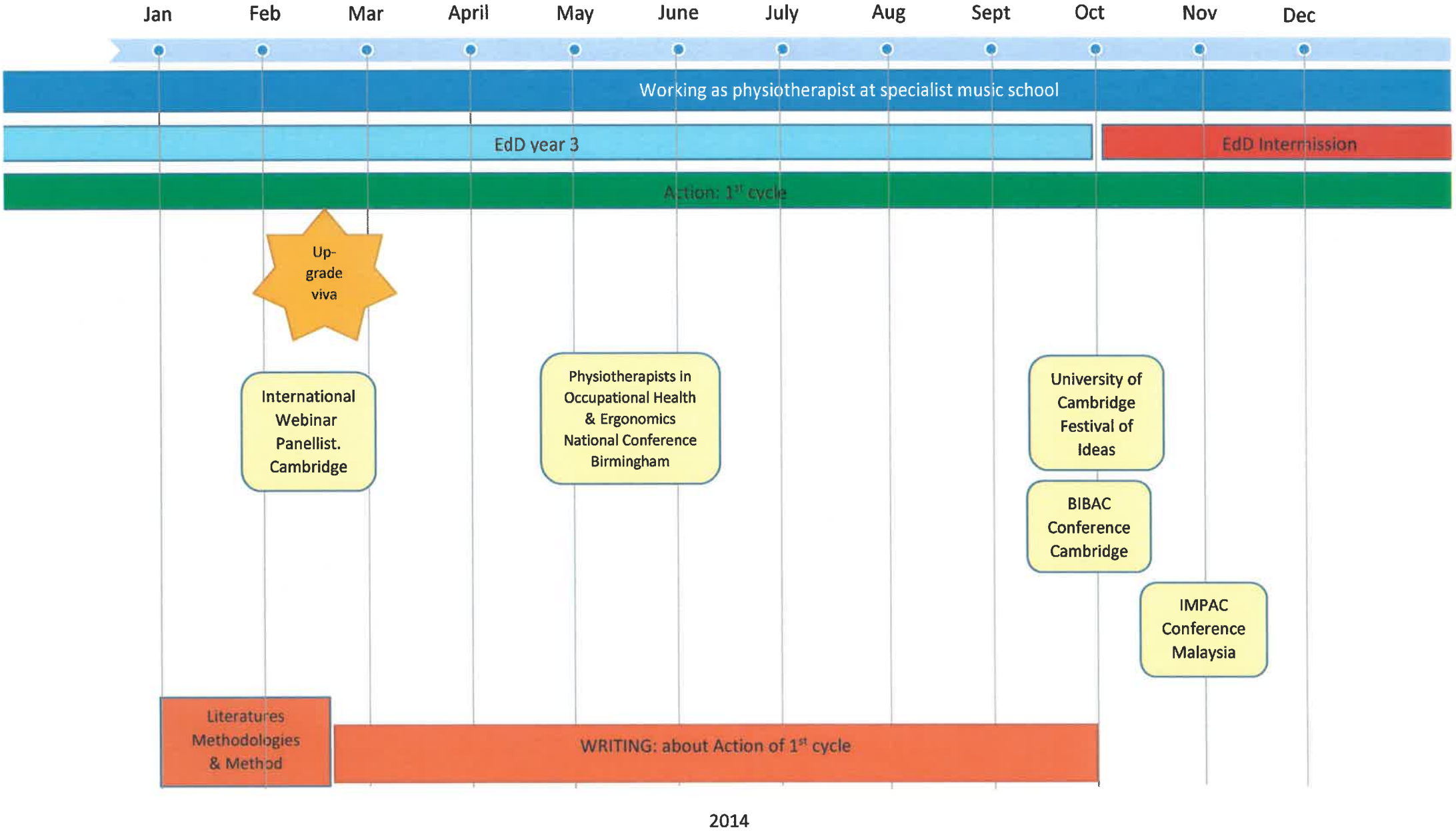

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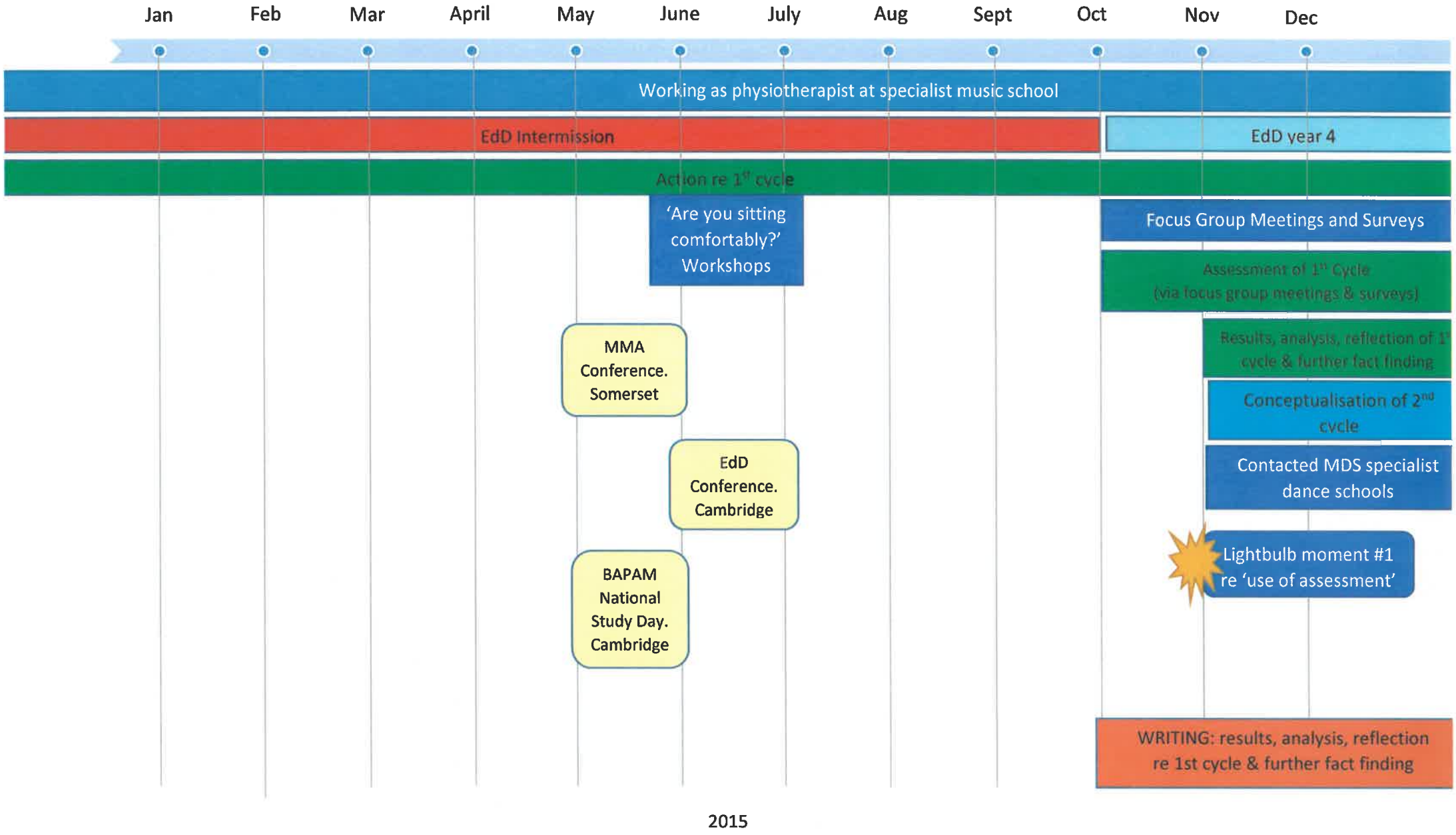

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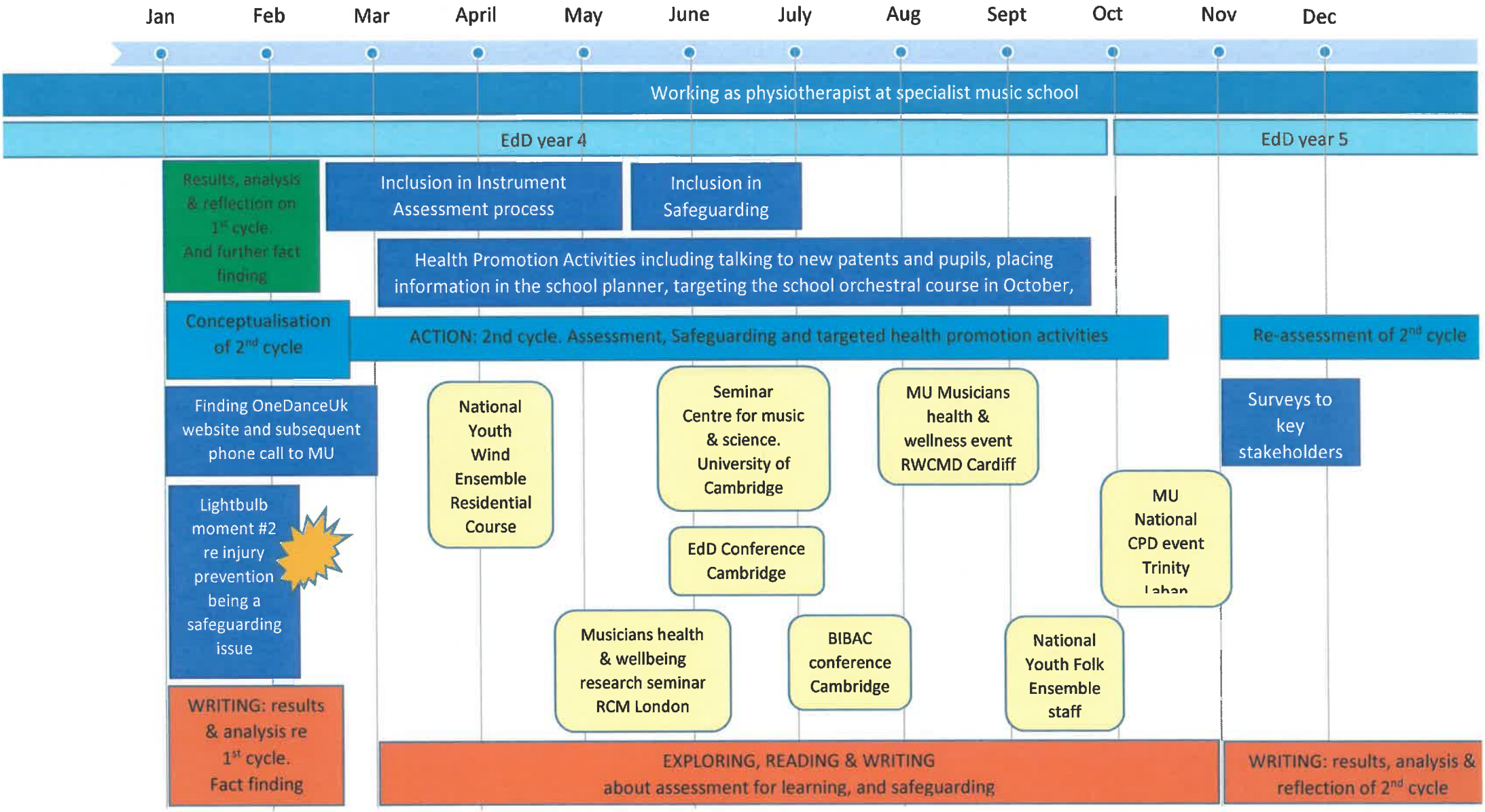

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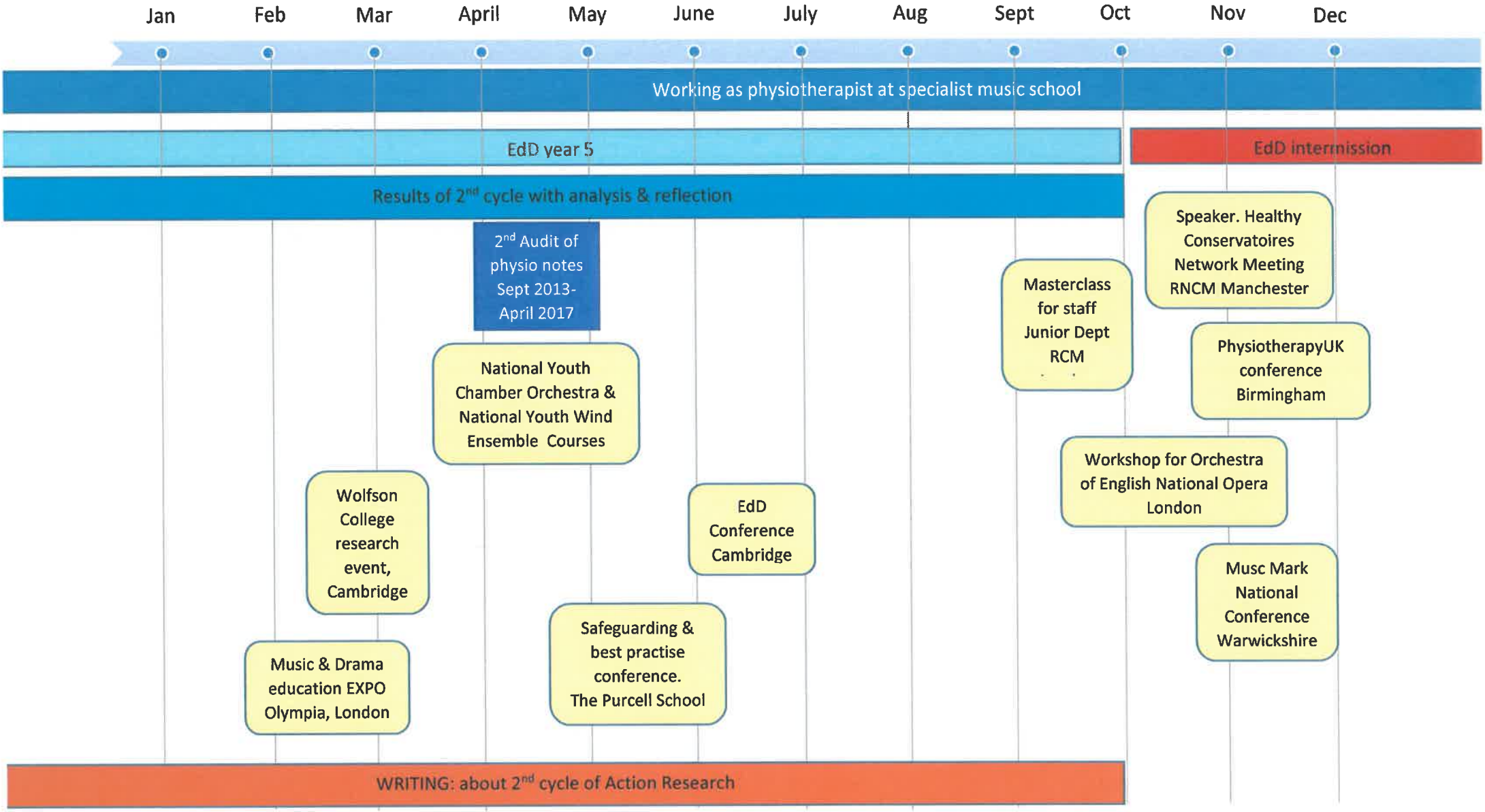
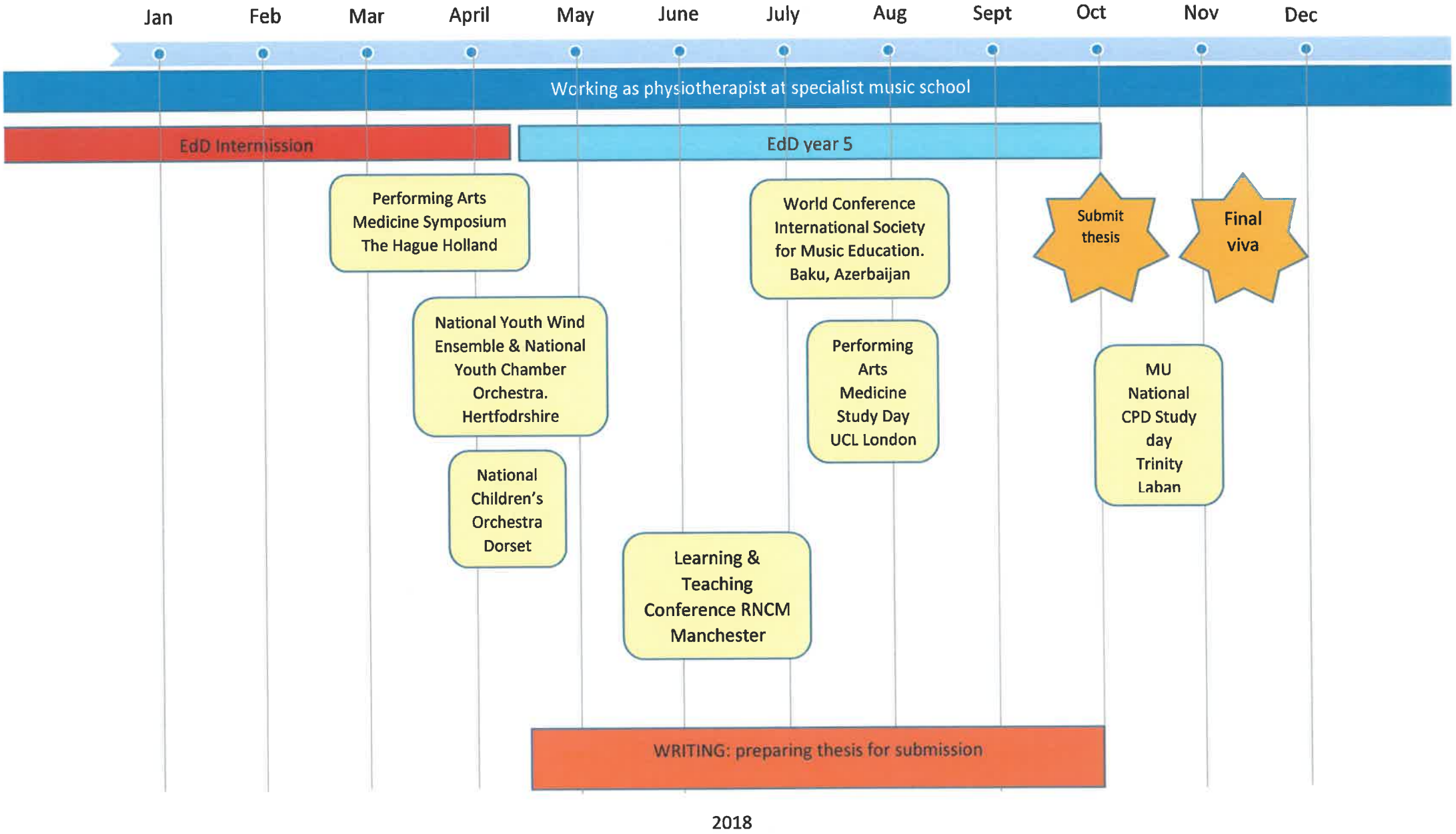


FIGURE 3.3 TIMELINE OF THIS ACTION RESEARCH PROJECT



It was fully anticipated that further cycles of reflection, fact finding, conceptualisation, planning change and implementing change would continue at the school beyond the completion of this thesis as a normal part of reflective practice for school improvement.

3.5 Methodology and Design - Summary

I started Chapter Three by stating the research aims (3.1 p55). Section 3.2 (pp56-63) discussed methodological considerations of ontology (pp56-57), epistemology (pp57-58), educational philosophy (pp58-59), the research paradigm (pp59-60), and ethical considerations (pp60-63), because a clear understanding of these will help to ensure that an appropriate methodology is selected in order that that the research aims are met. The importance of being able to ensure credibility (or validity) was introduced by way of the 'trustworthiness framework' (3.2.6 p63 and Table 3.1 p64), which will be referred to throughout the thesis. Table 3.1 (p64) shows where the trustworthiness framework has been referred to in the thesis. Section 3.3 discussed issues specific to working as an insider researcher (3.3.1 pp65-66) and change agent (3.3.2 p66).

Having established

- that my ontological and epistemological stance are subjective (3.2.1, 3.2.2 pp56-58),
- that my philosophical stance is post-modern (3.2.3 p58),
- and that the paradigm to be used is post-positivistic, interpretive and qualitative (3.2.4.2 pp59-60),

I have shown how this research is characteristically essentially qualitative in nature (3.4.1.1 p75), and the selection of Action Research as the methodology for this research was justified (3.4.1.2 pp76-79) as it best aligns with these stances and, of critical importance, that it has a proven track record of use by insider-researching-practitioners to effectively implement change is. This strengthens the credibility of the project in terms of the trustworthiness framework (see section 3.2.6 and Table 3.1).

The next section of the thesis is the 'Development' where Chapters Four and Five detail the two complete cycles of Action Research that were undertaken.

SECTION THREE – Development

Comprising Chapters Four and Five

In which the processes, pitfalls and practicalities of this Action Research project are detailed.

Chapter Four – The First Cycle of Action Research

The First Cycle of Action research – Introduction

Section Three comprises Chapters Four and Five and takes the role of the Development section in sonata form composition. Chapter Four details the first cycle of Action Research, starting with three pieces of fact finding 'scoping work' (4.1 pp81-111) which informed the final iteration of the research questions (4.2 p112), and continues with how the rest of the first cycle was conceptualised (4.3 p113) and carried out (4.4 pp113-119, 4.5 pp119-126, , 4.6 pp126-151, 4.7 pp151-170). It ends with a statement of the key findings (4.8 pp170-171), and a reflection and re-evaluation (4.9 pp171-174)

4.1 Fact Finding - Three Pieces of Scoping Work

In order to try and understand more about playing-related injuries in classical instrumental musicians, and more about the school, I looked at three distinct aspects, via three small scale studies undertaken between December 2011 and January 2012.

4.1.1 Playing-related Musculoskeletal Disorders at the Purcell School: An Audit of Physiotherapy Records (between October 2008 - December 2011)

The first piece of scoping work used pre-existing physiotherapy records of physiotherapy treatments between October 2008 and December 2011, to look at the incidence and types of injuries requiring physiotherapy. In this section I provide an explanation of the audit process, present the findings, and discuss the implications of the findings.

Audit is a mechanism used by healthcare professionals to assess, evaluate and improve care of patients in a systematic way (NHS England, 2018). It can be used to track what is happening to either individual patients, patient groups, or specific service provision, and measure these against pre-identified standards. The primary function of audit is to

improve outcomes in patient care. Records of patient care, treatment and resultant progress provide the data used in clinical audit.

In accordance with guidelines set out by the Chartered Society of Physiotherapy (CSP), and regulations set out by the Health and Care Professions Council (HCPC), I write full and comprehensive notes about each pupil seen for physiotherapy. These notes provide a legal record of physiotherapy assessments and treatments. They contain details of an initial assessment of what was wrong, including the onset and nature of the problem, details of treatment, subsequent progress and outcome. In addition to clinical information about the nature of the injury, these notes also record information about the instrument(s) played by the pupil, the amount of time spent practising,

An audit of my physiotherapy notes was made. It provided significant useful information about the incidence, causes and types of injuries seen and the instrumental groups most affected. Furthermore, data from the audit revealed that 82 per-cent of the injuries were probably preventable because they were directly caused by overuse or were related to posture. Of particular relevance to this thesis is that five major risk factors for playing-related injury were clearly identified.

This information was presented as a poster at Physiotherapy UK 2013 conference (October 2013), and in January 2014 an article based on the audit was published in the UK Association for Music Education 'Music Mark' magazine. A reduced copy of the poster and a copy of the article can be found in Appendix D. The risk factors emerging from the audit largely corresponds to the causes of injury and risk factors identified by (Klickstein, 2009) - see Figure 2.2.

The results of the Audit are shown in Table 4.1

Table 4.1 Results of Audit

RESULTS OF AUDIT OF PHYSIOTHERAPY NOTES BETWEEN OCTOBER 2008 and DECEMBER 2011

In December 2011 and January 2012, an audit of the physiotherapy records on playing related musculoskeletal injuries was completed, by me, in order to establish some baseline data.

The data set was all the physiotherapy treatment records made between October 2008 and December 2011.

The number of pupils on the school role during that time but was between 178-186 but varied slightly year to year, and sometimes fluctuated during the year as some pupils left and others joined the school. However, some of the pupils are not studying western classical instruments (the school has cohorts of composers, of vocalists, and of jazz musicians) and these do not appear in the audit.

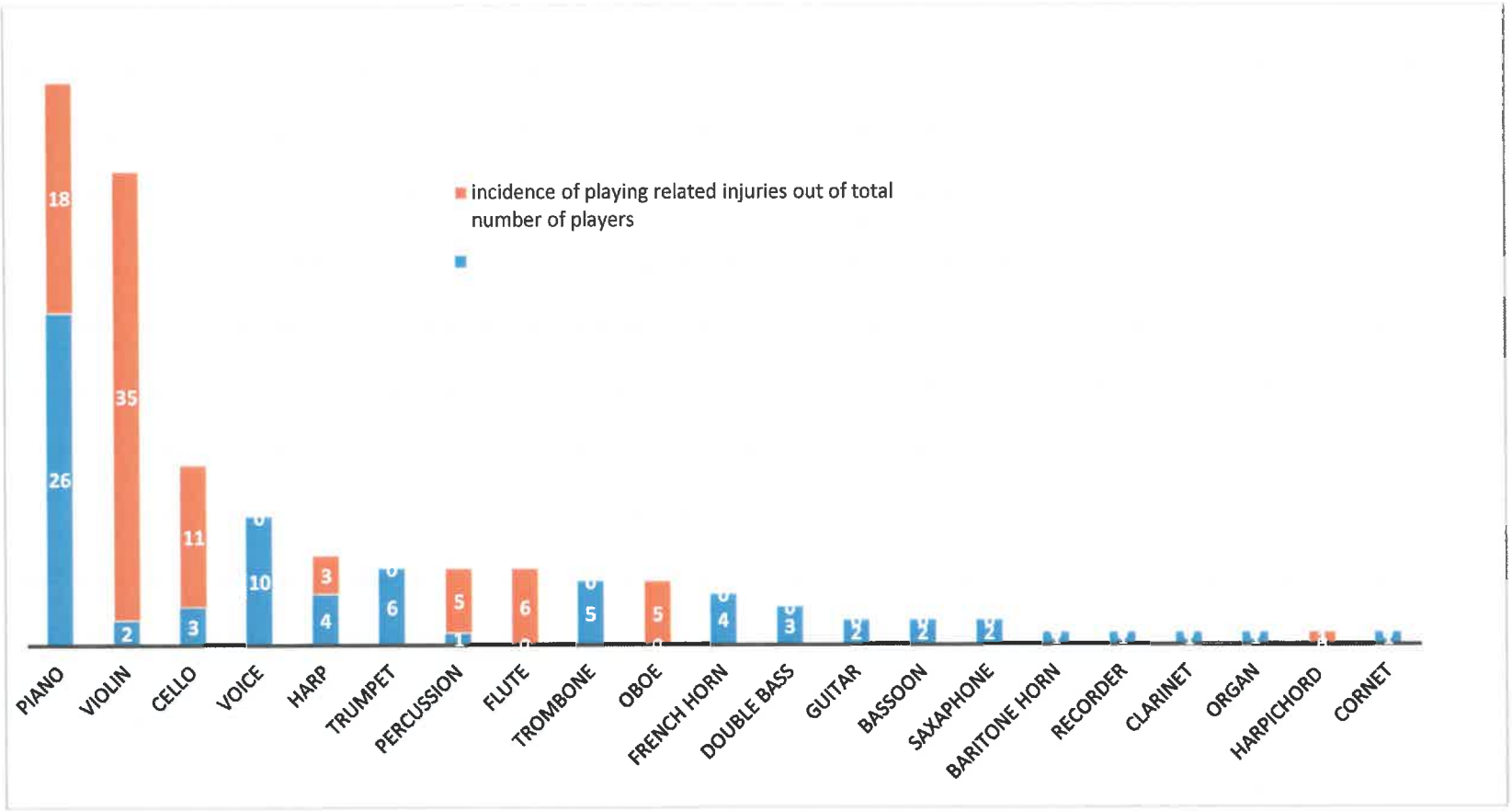
The data set was not subjected to statistical analysis and the results are presented numerically.

It revealed details about

- The incidence of injuries for each instrument
- Which parts of the body became injured
- Whether the injuries were acute, chronic, or recurrent
- The incidence of preventable injuries
- Risk factors for playing related injuries

The following three graphs illustrate incidence of injuries for each instrument, incidence of injuries by anatomical region, and the classification of injuries into acute, chronic or recurrent.

Table 4.1 Results of Audit



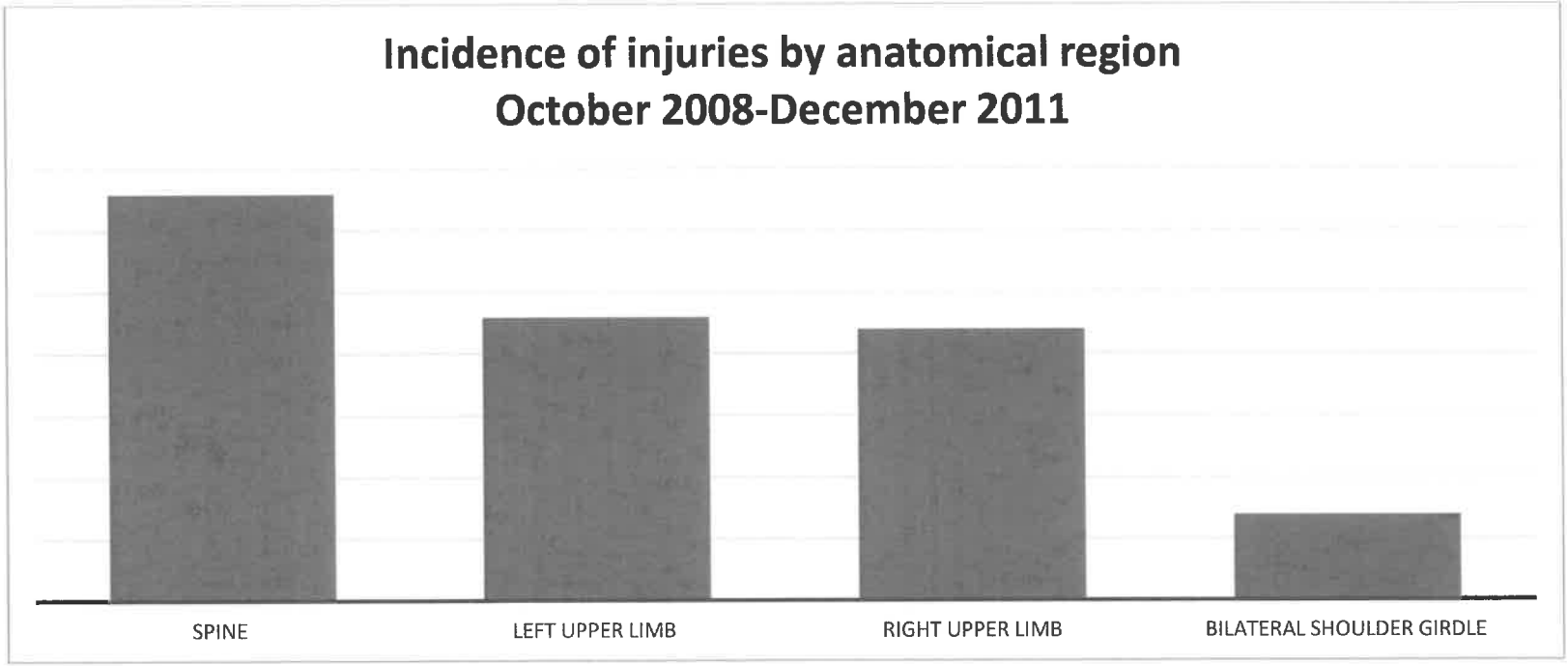
Incidence of playing related injuries per instrument group

These figures do not represent the number of players injured per instrument, as some pupils had more than one injury or recurrence of the same injury, but they provide a useful illustration of the level of incidence of injury per instrument.

It shows a total of **84 injuries** - some recurrent in the same pupil, and **70 instrumentalists without injuries**

Table 4.1 Results of Audit

Incidence of injuries, by anatomical region.

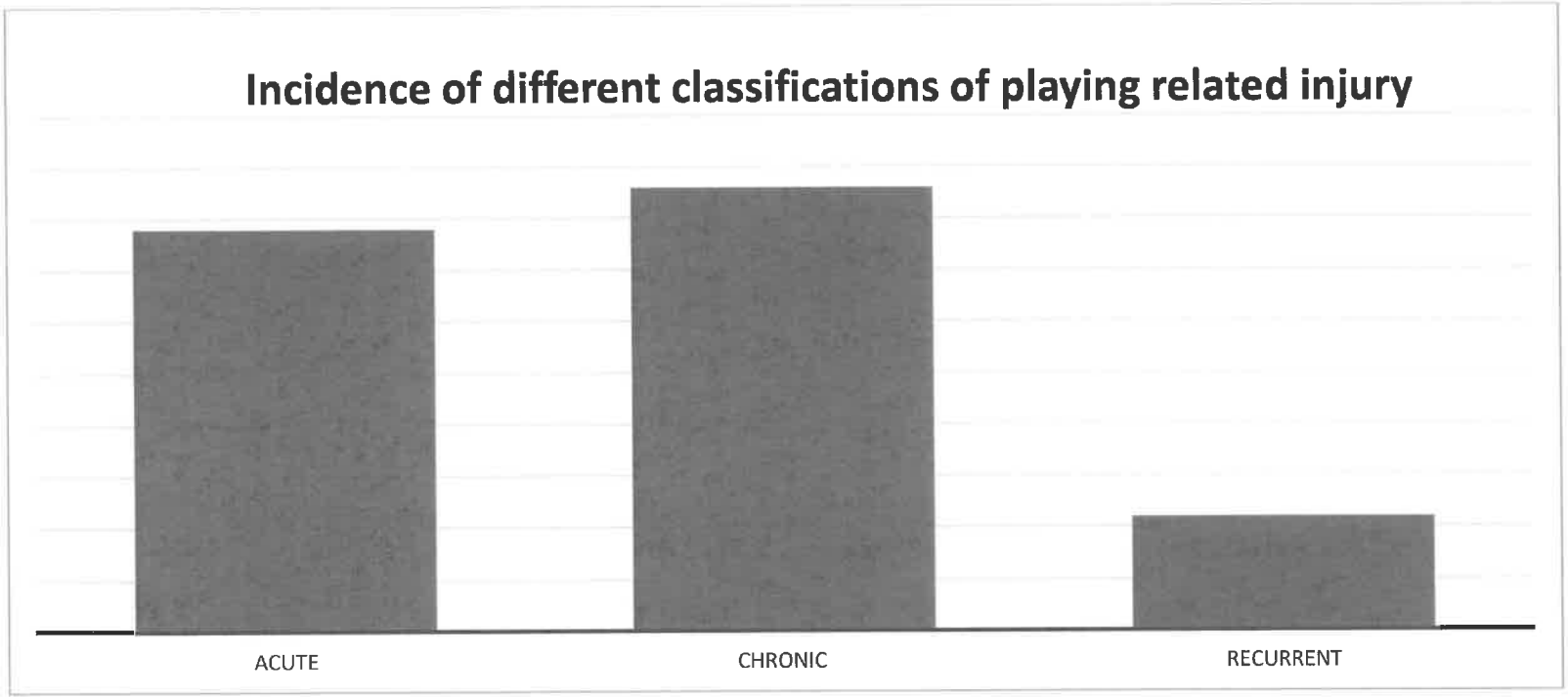


For the purpose of this audit

- the spine describes the area from the base of the skull to the base of the pelvis,
- the upper limb describes those structures situated between the shoulder joint at the top of the arm, and the ends of the thumb and fingers
- the shoulder girdle describes the area between the neck and the top of the arm.

Table 4.1 Results of Audit

Classification of injuries



- Acute injuries are characterised by a rapid onset after a specific incident. They have every chance of healing given the right circumstances. If an acute injury is not given the opportunity to heal, it can become a chronic injury.
- Chronic injuries are usually low grade injuries that 'grumble on', causing persistent pain and dysfunction. They are much more resistant to treatment.
- Recurrent injuries are repeated episodes of an acute injury.

Table 4.1 Results of Audit

Cause of injury

Overuse:

Overuse injuries typically occur when someone carries out a repetitive task, frequently and over a sustained period of time. It leads to pain in muscles, ligaments, tendons or nerves. There are many synonymous terms used to describe overuse injuries: repetitive strain injuries, cumulative trauma disorder, occupational overuse syndromes, work related upper limb disorder. All describe the scenario of increasing pain and gradual loss of function. Commonly seen in computer uses or factory workers on a production line, it is also seen in instrumental musicians. For instrumental musicians, often tiny movements make a significant difference to function and ability to play, a relatively minor overuse injury can have a significant and devastating effect on ability to play.

Posture:

Posture related aches and pains arise when the habitual posture or position adopted during playing uses the body in ways that adversely load anatomical structures such as muscles, joints, tendons and ligaments, and result in pain. Postures that we adopt when performing familiar tasks are typically habitual, and we often have no idea of the postures or positions that we are adopting.

Some of the injuries seen were a combination of poor posture and overuse.

Table 4.1 Results of Audit

Details of causes of playing related injuries

Posture	33	IIIII IIIII IIIII IIIII IIIII IIIII III
Overuse	22	IIIII IIIII IIIII IIIII II
Posture and overuse	14	IIIII IIIII IIII
Learning new repertoire with new physical demands (i.e. larger chords)	6	IIIII I
Stress	2	II
Change in biomechanics because of growth spurt	2	II
Carrying percussion instruments	1	I
Instability /muscle weakness	1	I
Idiopathic scoliosis	1	I
Digital neuroma	1	I
Systemic pathology	1	I

Table 4.1 Results of Audit

Of the 22 injuries attributed to overuse there were 18 with a clearly identified reason for the overuse:

Increase in playing time in preparation for an exam, assessment or competition	9	IIIII IIII
Participating in an orchestral course	6	IIIII I
6 hours practising a cadenza one Saturday	1	I
Multiple repetitions of a small passage during a lesson	1	I
Change to a larger instrument	1	I

Incidence of preventable injuries

Posture	46%	82% of these injuries are preventable
Overuse	36%	
Other	18%	

Table 4.1 Results of Audit

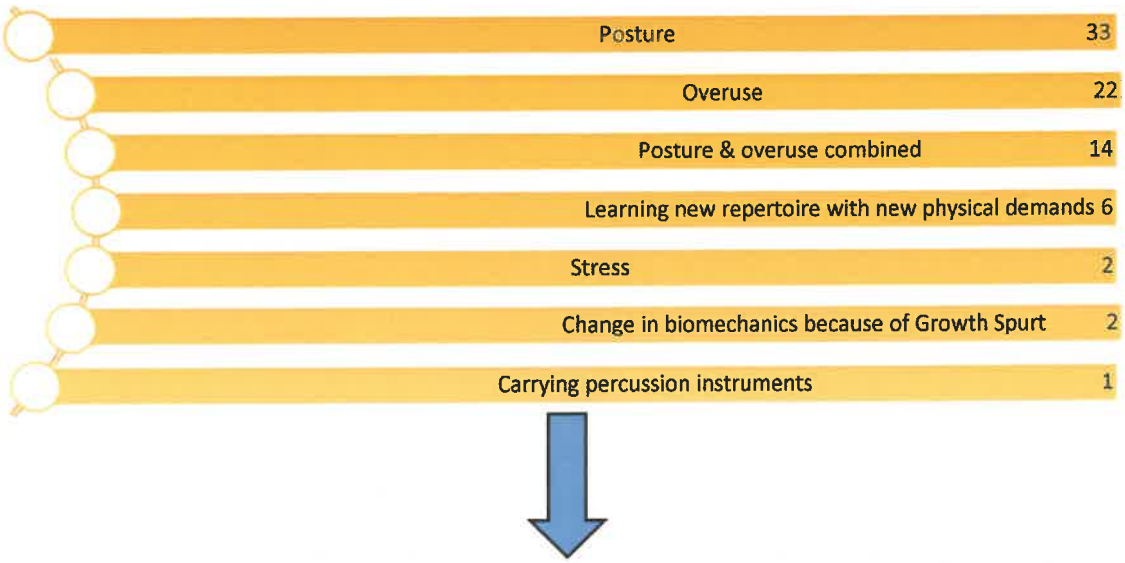
Risk factors for injury

From this information the following risk factors for injury were identified

1. Sudden increase in playing time
2. Introduction of new repertoire
3. Posture
4. Growth Spurt
5. Stress

Information extracted from the audit, in terms of the causes of playing-related musculoskeletal disorders, the numbers of cases seen, the reason for overuse, and the five risk factors for playing-related musculoskeletal disorders are shown in Figure 4.1.

Causes of playing-related musculoskeletal disorders with numbers of cases seen



18 of the 22 injuries attributed to overuse had a clearly identifiable reason for the overuse.

Increase in playing time in preparation for an exam, assessment or competition	9
Participating in an orchestral course	6
6 hours practising a cadenza one Saturday	1
Multiple repetitions of a small passage during a lesson	1
Change to a larger instrument	1

From this information the following risk factors for playing-related disorders were identified

Risk factors for Playing-related Musculoskeletal Disorders

Sudden increase in playing time
Introduction of new repertoire
Growth Spurt
Posture
Stress

Figure 4.1 The causes of playing-related musculoskeletal disorders, numbers of cases seen, reasons for overuse, and the five risk factors from the audit of physiotherapy notes

The audit did not pick up 'anatomical differences in body size or structure' (2.2.3.2) but did point towards 'growth spurts' (and immediately after) as being a time when the pupils were particularly vulnerable to injury. This seems likely to be because immediately after a growth spurt when long bones have lengthened, soft tissues, such as muscles, tendons, ligaments and neural structures have to then grow and lengthen to accommodate the new frame. At this point muscles are relatively weaker as they have yet to accommodate to operating across a new, longer lever, soft tissues are less flexible and the internal 'body-map' has yet to accommodate to the new shape and size resulting in the occasionally 'clumsy' teenager who knocks things over, trips over their own feet and crashes into doorways on their way through. This temporary combination of reduced accuracy of coordination, relatively weak muscles, and relatively less flexible soft tissues makes children particularly vulnerable to injury immediately after a growth spurt.

In summary, the audit clearly showed the incidence and types of injuries seen at the school, and five risk factors. The five risk factors for playing-related musculoskeletal disorders found at the school are in concordance with risk factors identified in orchestral musicians and conservatoire students (2.2.3). The nature of each of these risk factors means that the risks are avoidable, and therefore rather than being an inevitable part of playing (Lockwood, 1988; Shoup, 1995; Ackermann & Driscoll, 2013) these injuries are preventable and the moral imperative to prevent playing-related musculoskeletal disorders in pre-conservatoire age children is a key driver for this thesis

4.1.2 Conversations with Conservatoires

In the earliest stages of planning some sort of injury prevention initiative at the school, I wanted to look at what was provided by some of the UK Conservatoires. I was hoping to find out if there was any commonality in what was taught about injury prevention to conservatoire level instrumentalists across different conservatoires, with the (rather naive) thought that if there was an example of good practice in a Conservatoire, then I could perhaps use it as a model for developing a similar, but age appropriate programme at the school. In November 2011, I contacted four of the UK conservatoires that our pupils progress to. In this section I will explain how this scoping work was carried out and present the findings.

I contacted the Royal Academy of Music (RAM), the Royal College of Music (RCM), The Guildhall School of Music and Drama (GSMD), and the Birmingham Conservatoire. (now the Royal Birmingham Conservatoire). These four were selected as a convenience

sample because I have pre-established contact with colleagues at each of them though work with BAPAM, and because pupils from the school progress to them.

My initial contact was by e-mail, and this was followed, in December 2011 and January & February 2012 with visits to the RCM Centre for Performance Science (CPS), and to the RAM, with further email conversations and phone calls to the GSMD and Birmingham Conservatoire.

This scoping work has one major limitation in that there was no standardised method of gathering information. I approached each institution initially by email with a very general enquiry: I explained that through my work as the school physiotherapist I had identified a problem and was intending, via Doctoral level research, to try and reduce the incidence of playing-related musculoskeletal disorders in pupils at the school, and that this was a fact finding exercise to inform part of my study. Explaining my background, motives and intentions at the very start is an example of how the credibility of this work is strengthened in terms of the trustworthiness framework (3.2.6 and Table 3.1). Using an open, unstructured approach I asked a general question about the existence of any health-promotion type modules delivered to undergraduate students and asked if there was any data revealing the incidence of musculoskeletal injuries in the students.

I received four very helpful, but widely varying responses. Here follows an analytical summary of the initial, informal fact-finding scoping work which was undertaken in December 2011, January and early February 2012. This was presented at the Cambridge Kaleidoscope Conference in June 2012.

4.1.2.1 The Royal Academy of Music

At the RAM, I contacted a counsellor who works part time at the academy, providing a counselling service for students. I visited her at the RAM on an informal basis on January 13th. She was not aware of any taught health promotion or injury prevention sessions available to the students. She had an A4 size printed leaflet which was available to the students from a rack on the wall outside her office, along with a number of other advisory leaflets concerning subjects such as pregnancy advice and contraception.

Incoming students are sent a 'performance related health questionnaire' but they are not obliged to complete and return it. This means that any data that is gathered from the questionnaires that are returned is not representative of the population it is aimed at. She

described the incidence and issue of musculoskeletal injuries as 'hidden' and described the students as typically reluctant to disclose that they are injured or in pain, possibly because of a 'show must go on mentality', possibly because of lack of knowledge of the importance of treating injuries sooner rather than later, or possibly because they don't think anything can be done.

Since 1984 the RAM has had an Alexander Technique department. On February 6th I spoke to the head of that department. The department has six part-time members of staff. Alexander Technique is available to all students but is optional. Students who take Alexander Technique lessons are often recommended to do so by their instrumental teachers but are otherwise self-selecting. The funding for Alexander Technique is secure and ring-fenced because it originates from a trust fund. The money originally allowed for students to have 25 individual Alexander Technique lessons. More recently, to enable a greater number of students to have access to Alexander Technique, the number of lessons is capped at 20 per student, usually taken over a year. In occasional cases, students may have a total of 40 lessons.

There is not a physiotherapist directly linked to the RAM to treat musculoskeletal injuries once they have occurred. Instead, students are advised to access the GP practise at Paddington Green Health Centre. I contacted the health centre and the senior partner provided much helpful information. The practise has been providing GP services to students at the RAM for at least 20 years. The majority of students maintain registration with the GP at their home address, so the GP practice does not see everyone who develops problems. As general practitioners they see students for a range of issues, including asthma, mental health issues, contraception, and sexual health, but the commonest reason is performance related: usually musculoskeletal or problems with voice, but also performance anxiety.

Funding is available through Help Musicians UK for students to have access to private physiotherapy or hand therapy. These are usually practitioners associated with BAPAM. Sometimes NHS physiotherapists are used, but there are commonly waiting lists for NHS physiotherapy services and so the senior partner usually refers the student to specialists at BAPAM who have experience treating musicians.

The answers that he provided to specific questions are shown in Text Box 3.

Q Does anyone from your practise get the chance to talk to new incoming students during freshers week?

A. Dr X understands that there is a talk about preventing injuries given during freshers week. He did not have details of who delivered the session, but no-one from Paddington Green Health Centre is involved. He reflected that 'perhaps they should be'.

Q. Do you refer instrumentalists to NHS physiotherapists?

A. Yes, if funding is an issue, but usually am able to refer to BAPAM practitioners.

Q. Any feelings about when instrumentalists are more vulnerable to injury?

A. Based on students that come to his practise, he feels that students are at particular risk of injury when they first start at the academy, and during the run up to exams. At both of these points many students have an increase in amount of time spent playing and also an increase in anxiety which is a known risk for injury, as muscle tension increases and posture changes as a direct result of anxiety.

Q. Any data about which instruments are more risky to play?

A. No audit of this information has been carried out, but in addition to 'anyone who uses a computer', pianists, string players and guitarists are reported as most commonly seen. He also reported an increasing number of musical theatre students with ankle, knee, and back injuries.

Q. Are the numbers that you see steady year on year?

A. The numbers of instrumental students referring themselves to Paddington Green Health Centre each year is steady.

Text Box 3 Answers provided from a Senior Partner in the General Practice for The Royal Academy of Music.

In this section the 'state of play' regarding injury prevention and health promotion for students at the Royal Academy of Music has been revealed. The counsellor described the incidence and issue of performance related injuries as 'hidden' and there is literature showing that orchestral players conceal injuries and continue to play despite being in considerable pain (Rickert et al, 2014). There is also literature to show that amongst conservatoire students, willingness to play though pain is common (Park et al., 2007). The RAM provided Alexander Technique lessons for its pupils but these are not compulsory. The counsellor was not aware of any health promotion modules taught to the students.

The medical centre that the majority of RAM students are registered with, did not have access to students as a group during freshers week, nor as part of any health promotion work. The senior partner, based on his experience with the RAM students, felt that they were particularly vulnerable to injury when they first start, and when they are approaching exams, because of an increase in playing time, coupled with anxiety or stress. These are known risk factors identified by the literature (2.2.3.3), and also by the audit (4.1.1).

In this section I have shown that at the time that this information was collected, the RAM did not have overt injury prevention and health promotion strategies, nor taught modules about health promotion for musicians.

4.1.2.2 The Royal College of Music

The RCM is home to the Centre for Performance Science (CPS) led by Professor Aaron Williamon. The CPS promotes collaborative research among musicians and scientists at the Royal College of Music and leads applied interdisciplinary investigations of performance in real-world educational and professional contexts.

At the time that this information was gathered, current and on-going research activities at the CPS fell into the following areas: applied performance psychology and physiology, musicians' health and wellbeing, and musical development, education and expertise. I visited Professor Aaron Williamon, and Dr Rosie Burt-Perkins, a research associate, on January 13th 2012 at The Centre for Performance Science. Professor Williamon teaches on a course titled 'professional skills' on the first year of the BMus course. This provides first year students with insight into the principles of physical and mental health that are fundamental to performance success, delivered via a seminar series on musicians' health and well-being, and ten Alexander Technique practical sessions. In addition to the group Alexander Technique sessions in the professional skills module, individual Alexander Technique lessons are available for specific problems.

I contacted the student services manager at the RCM. She has noted that over the last few years 'a number' of 18 year olds have arrived at the RCM already with musculoskeletal problems. The student services manager reported that students often seek advice from student services if they are experiencing difficulties. Student services has close links with the GPs at a local health centre, and also provides information and printed material from BAPAM. More often than not students will go directly to BAPAM, rather than to the health centre. Treatment from BAPAM can be funded by the Help Musicians UK bursary scheme.

In this section I have shown that the RCM has the weight of the centre for performance science informing its practice, and one research strand of research at the CPS is musicians health and wellbeing. The head of the CPS was directly involved with delivering a module to first year BMus students providing information about musicians' health and wellbeing. The student services manager provides information about BAPAM, and students often go directly to a BAPAM clinic for advice, rather than to the local medical centre.

4.1.2.3 The Guildhall School of Music and Drama

The GSMD had a compulsory module for first year instrumental students. Titled 'body matters' it comprises 14 two-hour sessions delivered once a week between October and February of the first year of undergraduate study. The sessions include a mixture of musculoskeletal topics, and performance psychology issues. It is taught by Prof. Aaron Williamon, and an experienced performing arts medicine physiotherapist. The session titles were as follows:

- Introduction to 'body matters': health and body awareness
- The importance of good health and fitness in sustaining musician's lives
- The psychology of performance: managing anxiety and enhancing focus
- Anatomy and physiology in a nutshell!
- Developing mental skills for performance
- All about the joints and hypermobility
- Anatomical difficulties experienced by instrumentalists
- Achieving musical excellence: gifts, talents and deliberate practise.
- Does practise make perfect?'
- The importance of posture - aids and hindrances
- The art and science of musical memory
- Musicians; pain in all its guises (with remedies)
- Managing competition/s in the profession

The GSMD seemed to be particularly proactive in issues relating to health promotion and injury prevention in musicians, recruiting their own physiotherapist (who also works for BAPAM), and also the head of the CPS at the RCM to deliver a compulsory and comprehensive module in the first term of the first year of the BMus.

4.1.2.4 Birmingham Conservatoire

Dr Jonathan White is a medical GP in Wolverhampton. He has been involved with the Birmingham conservatoire since about 2001, when the then principal of the conservatoire, Professor George Caird was keen to address the issues of performance related injuries, with an emphasis on prevention. Through the Association of Medical Advisors to British Orchestras (AMABO), he is the advisor for the City of Birmingham Symphony Orchestra and

has delivered talks to the National Schools Symphony Orchestra, the National Youth Orchestra, BAPAM, and the Musicians Union. He works for BAPAM, as part of their national network of healthcare professionals, offering advice, support and treatment to performing artists.

His input at Birmingham Conservatoire comprised a comprehensive talk with power-point presentation titled 'health for musicians'. This was delivered to the new incoming students during the induction week at the start of the academic year.

In the talk, Dr White highlighted issues specific to new students. Topics explicitly and extensively covered include health, fitness, amounts of exercise, the effect of posture on musculoskeletal health, practise habits, the benefit of prevention of injury, acoustics and noise hazards, nutrition, alcohol, smoking and drugs, living away from home, safety and wellbeing, relationships, emotional and sexual health, performance anxiety, the health risks of smoking, alcohol and drugs, and where to access help if needed. The help available to students at the Birmingham conservatoire includes access to BAPAM, the Musicians Union, Alexander Technique lessons, movement classes, performance coaching, and the university student health centre.

The talk is comprehensive and explores and explains risks for injury, as well as giving strategies to reduce injury risk, and prevent injury. In a very basic analysis of the weighting given to various topics covered in the talk, I counted the number of power-point slides per topic. This is shown in Table 4.2.

Table 4.2 Number of power-point slides per topic in a 'Health for Musicians' talk to first year BMus Students at Birmingham Conservatoire.

Topic area	**Number of slides in power-point presentation**
Posture	3 (III)
Health and Fitness	4 (IIII)
Performing Arts Medicine	4 (IIII)
Smoking	7 (IIIIIII)
Performance Anxiety	9 (IIIIIIIII)
Alcohol	10 (IIIIIIIIII)
Practise	11 (IIIIIIIIIII)

A range of issues are addressed, with an emphasis on the impact of practise on musicians' health. The talk provides details and examples of risky practise strategies as well as advice on how to practise safely.

In this section I have shown that the Birmingham Conservatoire has a comprehensive talk to its new students during their induction week at the very start of the BMus course, covering a wide range of relevant topics related to musicians' health.

4.1.2.5 Conversations with Conservatoires Conclusion

This piece of scoping work has one major limitation: there was no standardised method of gathering information. I approached each institution with a very general enquiry and spoke to a variety of people in a number of different roles, using an open, unstructured conversational approach. I sought and obtained retrospective permission to identify three participants in the conversations (Aaron Williamon, Rosie Burt-Perkins from RCM and Jonathan White from Birmingham). The data that I gathered revealed three particularly useful insights and these are shown in Text Box 4.

Across the four institutions

- there is no commonality in **what** health promotion/injury prevention material is offered or presented to students
- there is no commonality in **when** health promotion/injury prevention material is offered or presented to students
- there is no commonality in **how** health promotion/injury prevention material is offered or presented to students

Text Box 4 Key Insights from the Conversations with Conservatoires.

The reasons for why this may have been the case, are many and complex, and can be usefully viewed from a number of perspectives including historical, political, economic, and pedagogical. Historically and politically, each of these conservatoires has developed in isolation from each other and each works independently. There is a level of competition between them in attracting suitable students. Each one is autonomous in terms of the courses that they provide, and there is no direct collaboration between them about the issues of performers' health.

The economic climate with ever tightening financial constraints, and budget cuts across all departments, make funding for curriculum development, or teaching on new courses extremely difficult or impossible to obtain. It is quite simply not a priority.

In terms of pedagogy, instrumental teachers generally have a wonderful knowledge of the instrument and the music that they teach, and a small number are qualified teachers or practitioners of body-work techniques such as the Alexander Technique, Bowen Technique, or Feldenkrais. Usually they have become interested in such work, as a direct result of trying to solve a particular playing-related musculoskeletal problem of their own. Very few, however, have knowledge and understanding of anatomy, biomechanics, pathology or exercise physiology, to the same depth as a sports coach, a dance teacher or a physiotherapist.

Despite this, conservatoire students experiencing pain, tend to seek advice from their instrumental teachers initially, rather than seek medical advice (Williamon & Thompson, 2006). This raises an interesting question about the perceived importance of the role of the musculoskeletal system in instrumental playing, and compares starkly with the importance placed on understanding and care of the body in dance or athletic training, although the demands made on the body by participating in dance, sport or playing a musical instrument are comparable (Kreutz et al., 2008; Watson, 2009).

In summary, across four different UK conservatoires in January 2012, I found a lack of commonality in what, when and how injury prevention and health promotion material is presented to conservatoire students, and this meant that there was not one simple, proven, health promotion/ injury prevention course running within conservatoires that could be used as a model for, or be adapted for use with pre-conservatoire age pupils at the school.

At the time of submitting this thesis, I would like to note the significant progress in musicians health and wellbeing work that is now undertaken in Conservatoires. This is partly in direct response to a collaborative initiative called the Healthy Conservatoires Network, which includes representatives from all the UK Conservatories, and is seeking to promote evidence based best practise in musicians health and wellbeing across the network.

Such significant progress has been made, that in November 2018, a new and unique role within the sector was created and the Royal Northern College of Music appointed the first ever 'lecturer in musicians health and wellbeing'.

4.1.3 Issues of Health and Fitness: Questionnaire to Pupils.

In this section I am going to look at issues of health and fitness at the school before introducing and discussing the third piece of fact-finding scoping work. This was carried out over the winter of 2012-2013.

The health and fitness of pupils at the school is a key concern for several reasons. PE provision within the school is constrained by limited facilities (1.2.1) and by constrictions on time. Time dedicated to physical activity at the school, both within the timetable and as an extra-curricular activity is below Government guidelines set out by the Department of Health. These recommend sixty minutes or more, of vigorous activity every day for children and young people aged between five and 18 (Department of Health, 2011; World Health Organisation, 2011). The relevant section of the Department of Health guidelines is shown in Appendix E.

The situation is compounded because as a mainly boarding school, the majority of pupils do not have the opportunity for 'out of school' activities to supplement any lack of provision within the school. The school campus is small and compact and minimal walking is required between the classrooms, the boarding houses and the practise rooms.

The impact of the small campus on baseline activity levels is augmented by a fairly typical sedentary teenage lifestyle, with sitting required for school work and for 'prep' (homework), and this is further augmented by the fact that many instrumental musicians sit to play their instruments, often for many hours each day.

This collection of circumstances combines to produce a situation where the majority of pupils are doing significantly less physical activity than is recommended by national and international policy makers. Sixty minutes of daily physical activity is enough to promote healthy bones, muscles and joints, improve function of heart and lungs, improve co-ordination and movement control, promote maintenance of a healthy body weight, and help control symptoms of anxiety and depression. An increase in amount of exercise at the school could be of particular relevance to the group of pupils who experience high levels of performance anxiety, or who are troubled by stress.

In October 2012, the head-teacher identified a number of issues, including health & fitness, about which he wanted to find-out more information. As part of a fact-finding initiative from this headmaster, staff were asked to join one of five working groups. I elected to join the 'health and fitness working group'. The group comprised eight members of staff from across the school. We wanted, in general terms, to canvas pupil attitudes towards physical activity, emotional wellbeing, and the food at the school. In order to do this the group designed a questionnaire to be distributed by tutors, to all pupils.

A copy of the questionnaire is provided on pages 101- 103

Purcell School Health & Fitness Questionnaire

Please draw a circle around your answer

Year Group: 5 6 7 8 9 10 11

Lower Sixth Upper Sixth

Type of Student: Day Student Boarding Student

Gender: Male Female

Please circle the Answer below.

1. The definition of being healthy is a state of complete physical, mental, emotional and social well-being with the absence of disease and illness?

   YES NO *if you have answered NO please state why?*

   .....

   .....

   a. Are you able to give an example of being physically healthy?

   .....

   .....

   b. Are you able to give an example of being emotionally healthy?

   .....

   .....

   c. Are you able to give an example of being socially healthy?

   .....

   .....

d. Are you able to give an example of being mentally healthy?

.....

.....

.....

2. Are you physically fit if you are unable to meet the demands of the environment that surrounds you?

YES **NO** *if you have answered NO please state why?*

.....

.....

3. Do you think there is enough Sport, Health and fitness within the school?

YES **NO**

4. How many hours of Physical activity do you do within school including timetabled games lessons?

0-1 **1-2** **2-3** **3-4** **4-5** **5+**

5. How many hours on average of physical activity do you participate in per week?

1-2 **2-3** **3-4** **4-5** **5+**

6. What activities do you participate in on a weekly basis in and out of school?

Football **Volleyball** **Badminton** **Swimming** **Gym** **Circuit training** **Gymnastics**

Athletics **outdoor pursuits** **Frisbee** **Running** **Other**

If other Please state.....

7. What sport and health related activities would you like to be offered in the future?

.....

.....

.....

8. What benefits do you believe and think will be improved from participating in physical activity?

Physical Fitness **Mental health** **Make new friends**

Improved performance (Sport and Musical) **less chance of injury**

Other (Please state).....

9. What do you believe to be the problems of partaking within physical activity?

Increased risk of injury **Physical fitness** **Mental Health**

Decrease in performance (Musical/Sport)

Other (Please State).....

10. Should school lessons include more information on the awareness of health issues?

Yes **No**

11. How do you think your music can benefit from partaking in physical activity on a regular basis?

.....

.....

.....

12. Is there anything that the school could offer to help improve your health, fitness and diet?

.....

The questionnaires were completed voluntarily, and 65 completed questionnaires were returned anonymously via the tutors. The findings, therefore, are from a self-selecting group of voluntary participants, spanning a range of ages from nine to 18. There were 180 pupils on role at the school at the time the questionnaire was administered, and so this was a response rate of 36.1 per-cent. This is below 50 per-cent and therefore the findings cannot be considered statistically 'robust', however they do provide a glimpse of what those that did respond feel and think about the issues asked.

The working group analysed the answers provided in the returned questionnaires using coding and category analysis and compiled a report which was submitted to the head teacher. A copy of the full report is located in Appendix F

The key findings from the health questionnaire are summarised in Text Box 5.

1. All pupils do less than the current recommended amount of physical activity each week (World Health Organisation, 2011: and Government Guidelines, 2011)
2. 60% of respondents want an increase in provision of physical activity within the school
3. Pupils expressed apprehension about
   - The possibility of sustaining a sports injury they may affect their instrumental playing
   - Time spent on physical activity detracting from instrument practice time

Text Box 5 Key Findings from Health Questionnaire to Pupils - Winter 2012-2013.

Despite pupil apprehension about participating in sport because of the perceived risk for hand injury, in an apparently contradictory stance, the vast majority of the respondents think that their music-making can benefit from taking part in physical activity on a regular basis. There are many activities, such as dance, swimming, running and walking which, compared to some ball sports or contact sports, carry very little risk for hand or upper limb injury. When introducing more (or new) physical activity, it will be important to ensure that the pupils feel safe and feel that risks have been minimised.

4.1.4 Summary

The fact-finding scoping work (4.1) provided a means whereby the issues around playing-related musculoskeletal disorders in instrumental musicians at the school could be better understood.

The audit of notes (4.1.1) revealed five risk factors for playing-related musculoskeletal disorders in pupils at the school. These are:

1. Sudden increase in playing time
2. Posture/position when playing
3. Introduction of new repertoire with a different technical demand
4. Stress
5. Growth Spurts.

The first two of these risks can, with forward planning, care and knowledge, be avoided. The third, fourth and fifth risk factors are clearly not avoidable but can be mitigated for. Risk is cumulative and the higher the number of risk factors operating at any point, the greater the risk of playing-related injury.

The conversations with conservatoires (4.1.2) clarified that there was no commonality between the conservatoires in the content, or timing of delivery of the various health promotion modules at each institution. There was no one single 'off the shelf' pre-existing exemplar of an injury prevention / health promotion course being taught across the four conservatoires, and no consensus about what topics were covered, nor when. The implication of this is that I have the opportunity to design and implement a playing-related injury prevention and health promotion initiative at the school in an organised, structured and innovative way, without feeling pressure to follow existing, pre-established models in conservatoires.

The results of the health questionnaire (4.1.3) indicated that activity levels in all the pupils failed to meet government guideline levels. A vast majority of pupils who responded to the questionnaire thought that their music-making could benefit from taking part in physical activity on a regular basis, although there was anxiety about acquiring an injury through sport, that might impact on playing.

4.2 Research Questions Revisited and Finalised

The five risk factors for playing-related musculoskeletal injuries, revealed by the Audit of physiotherapy notes (4.1.1) was such a key piece of information that I wanted all stakeholders at the school to know about it. , that I revisited the early version of the research questions and improved them so that they now include specific wording about five risk factors for playing-related musculoskeletal disorders. The final iteration of the Research Questions can be seen in Text Box 6.

Play Well:

Education for Prevention of Playing-Related Musculoskeletal Disorders

at a Specialist Music School in the UK.

A Physiotherapist-led Action Research Project.

Research Question One:

To what extent can raising awareness amongst key stakeholders, of five pre-established risk factors for playing-related musculoskeletal disorders, influence risk taking behaviour (in relation to musculoskeletal disorders) in elite young instrumental musicians at a specialist music school?

Research Question Two:

To what extent can the incidence of playing-related musculoskeletal disorders be measurably reduced as a result of increasing awareness of risk factors?

Text Box 6 The Research Questions

4.3 Conceptualisation of rest of the First Cycle of Action Research

The conceptualisation of the first cycle of Action Research actually began, informally, before the start of the EdD, when the extent of playing-related injuries in the pupils became clear. The relevance and potential benefit of developing some sort of injury prevention and health promotion initiative at the school became clear:

- after the fact-finding scoping work (4.1), which indicated that the injuries being seen were probably preventable and that awareness of the risk factors for playing- related injures was poor,
- after reviewing literatures, including those supporting the case for a preventative curriculum within a specialist music school (2.2.8), which helped me develop a deeper understanding of the contextual issues involved in the development of playing-related musculoskeletal disorders within the western classical music teaching tradition and
- after exploring methodologies and realising that Action Research can be used by insider-researcher-practitioners to initiate change (3.4.1).

Having completed the first two step of an Action Research Cycle, in identifying a problem and then finding out more about the problem and the context, the 'action' component of the first cycle began with three health promotion initiatives that were targeted predominantly at the pupils. These were implemented at the school between June 2013 and June 2015.

4.4 Action

In this section I describe the implementation of the three health promotion activities, and then introduce about risk assessment from the perspective of injury prevention and health promotion, before discussing how the process of developing a risk assessment tool could be used to engage key stakeholders in the injury prevention process.

4.4.1 Health Promotion Activities between June 2013 & June 2015

4.4.1.1 Health Promotion Posters

The use of a 'performance wellness noticeboard', which was positioned along the main corridor of the school, next to the nurses' noticeboard seemed an ideal place to put information about health promotion and injury prevention. It already displayed a set of anatomical posters of the spine and the upper limbs.

In June 2013, I designed a set of posters with information about injury risk and injury prevention and these were displayed on the noticeboard. A set of these health promotion posters can be seen in Appendix G. I directed some of the pupils to the notice board and surveyed their reactions to the posters: they reported that they liked them, and found them

informative and amusing, but after one week the same pupils admitted that they had not looked at the noticeboard since, and generally did not look at any of the noticeboards except those directly relating to music activities (lesson timetables, rehearsal schedules, ensembles, news of competitions, etc.). This was broadly, and not surprisingly, typical of attitudes prevalent within the school, and reflects the intense interest in, and priority of, music-based activities.

Subsequently, in the summer of 2015, the school main corridor was refurbished, and all noticeboards were removed. The Nurses noticeboard and the performance wellness noticeboard were never replaced, and that set of health promotion posters were not used again because I had learned that this mechanism was not effective.

4.4.1.2 'What's that, Henry?' Facebook (fb) page

As the use of posters on a noticeboard seemed to be of limited use because pupils admitted that they did not regularly look at that noticeboard, I decided to try another strategy. The use of social media is widespread and Facebook was amongst the most popular social networking tools in the world with over 25 million user accounts in the UK (Hertfordshire grid for learning website December 28th 2015). In May 2013, I decided to launch a Facebook page aimed at the pupils with the intention of transmitting items of news and information, stimulating interest in, raising awareness of and generating conversation about instrumental musicians' health and wellbeing and performing arts medicine.

Mindful of the ethical considerations of using social media to contact pupils, I consulted the child safeguarding lead at the school and used guidelines on the Hertfordshire grid for learning. Facebook can only be used by children aged 13 and over so this targeted the older pupils in the school. The page was titled 'What's that, Henry?'. Henry, was the fictional 'Wise hamster of West Hertfordshire' sharing his name with the 17th Century English composer, Henry Purcell. The first post was made on 19th June 2013 and as of 28th December 2015 'What's that, Henry?' had a total of 29 likes. Clearly attempts via word of mouth at generating 'likes' or 'followers' amongst pupils and other stakeholders at the school had extremely limited success. The page reached a total of only 31 followers - fifteen of whom were friends of mine and not pupils - and I stopped posting on the page on 12th May 2017.

4.4.1.3 'Are You Sitting Comfortably?' Workshops.

Some groups of instrumental players, such as upper strings (violin and viola) and some woodwind (flute, oboe and clarinet) typically stand during lessons and when practising but are required to sit during ensemble or orchestral playing. Many of these have never been taught how to sit to play, and as far as the body is concerned standing to play and sitting to play are entirely different activities, and as spine posture influences both ability to breath effectively for woodwind and brass players and freedom of movement in the upper limbs for violinists and viola players, there are significant benefits to players, in learning how to sit.

From my clinical work during the early 2000's when I worked in the field of Occupational Health with computer-based office workers, I had developed, with a colleague, a series of three practical and interactive workshops about back care for desk-based workers. Using these as a template, I developed a 45-minute workshop about sitting for orchestral players. This workshop has now has been successfully presented and warmly received at a number of conferences: Music Masters and Mistresses Association (MMA) Regional CPD days, in London, Nottingham and Cambridge, the MMA national conference in May 2015, Building Interdisciplinary Bridges Across Cultures (BIBAC) Conference 2016, International Society for Music Education (ISME) World Conference 2018, and in a number of schools (Exeter School, The Leys School, Cambridge, The Stephen Perse Foundation School, Cambridge, and St Johns College School, Cambridge) but it has proven significantly more difficult to run workshops within the Purcell School: A workshop was organised for sixth form pupils (school years 12 and 13) in June 2015. Attendance was not compulsory and as this was a day that coincided with an open day at the Royal Academy of Music, only nine sixth formers out of 42 attended, and the music department did not give me another opportunity to run the workshop on a different date, citing that they timetable was so busy, there was no time available.

4.4.1.4 Reflection

The 'scattergun approach' that I used, implementing a number of initiatives in a relatively short space of time, with the intention of stimulating interest, generating discussion and promoting change, was ineffective because no single initiative was sustained long enough to have an impact, and perhaps because the information was coming from one source: the school medical centre, which may have implied to the pupils that the music department and the instrument teachers were not involved, indicating a lack of 'buy-in' from the school.

A more structured, focused and organised strategy was needed, involving a greater number of stakeholders, and trying to increase their awareness of the link between risk factors and injury. The first cycle of Action Research was strategically planned to achieve this, by introducing the concept of risk assessment. In the following section I am going to talk about risk assessment in general terms, and then in relation to applying it to the risk factors for playing-related musculoskeletal disorders.

4.4.2 Risk Assessment

There is an established body of work about the risk factors for playing-related musculoskeletal disorders in instrumental musicians (Ackermann & Adams, 2004; Driscoll et al., 2011; Klickstein, 2009), and my previous work as a physiotherapist in the field of occupational health has helped to informed my knowledge and opinions about risk in the working environment. I am now 'field crossing' by bringing this knowledge into music education.

There is a raft of legislation in the UK, aimed at protecting employees from harm at work (Health and Safety Commission, 1992) which set down standards and requirements in a number of areas including risk assessment (regulation 3). This legally binding regulation sets out obligations including that employers must undertake a suitable and sufficient assessment of the risks to the health and safety of their employees.

The Health & Safety Executive document 'Risk Assessment – A Brief Guide to Controlling Risks in the Workplace' explains that the risk assessment should identify hazards and evaluate the extent of the risks posed by them. However, the legislation is aimed at employers and employees within a workforce, not at school children within a school.

The following definitions are commonly used:

> Hazard: something with the potential to cause harm
> Risk: the likelihood of the potential harm being realised
> Extent of risk: to include factors such as the likelihood of harm, the potential severity of the harm and the population which might be affected.
>
> (Chartered Society of Physiotherapy, 2002)

This briefing paper explains that the level of detail of an assessment should be proportional to the risk, and that employees are expected to help themselves to identify risk.

The CSP summarises that risk assessment is not a difficult concept and should not be over complicated. It is a logical process of identifying hazards and putting in place sensible measures to prevent or control them. It seems an obvious, if field-crossing step, to apply these guidelines, aimed at protecting employees and employers in a workforce, to children within a school.

In February 2014 the Department of Education (DoE) produced guidance and advice for local authorities, school leaders, school staff and governing bodies on their legal duties and powers, in relation to health and safety within schools. Key points include:

1. It is important that children understand and manage the risks that are a normal part of life.
2. Employers, school staff and others also have a duty of care under common law to take care of pupils in the same way that a prudent parent would do.
3. The terms risk assessment and risk management are used to describe the process of thinking about the risks of any activity and the steps taken to counter them.
4. Sensible management of risk does not mean a separate risk assessment is required for every activity.
5. School employers should always take a common sense and proportionate approach. (Department of Education, 2014)

Under the advice outlined above, schools are legally obliged to provide a safe and healthy working environment for staff and visitors, taking reasonable steps to reduce risks, and the school complies with this by annual completion of risk assessments in working areas such as the classrooms and the kitchens, but the DoE guidelines were not being applied to the risk management of instrument playing, resulting in the playing-related musculoskeletal disorders that I was employed to treat.

This realisation was the trigger for me to want to use the next part of the first cycle of Action Research to initiate some sort of risk awareness strategy within the school: everyone who has anything to do with the care and wellbeing of the pupils should be aware of the five risk factors for playing-related musculoskeletal disorders that were identified from the audit of physiotherapy notes (4.1.1).

I will now introduce risk assessment tools and discuss their use in a variety of settings. The most cursory of glances at the members pages of the CSP website revealed

members discussing an osteoporosis risk factor assessment tool, the World Health Organisation (WHO) fracture risk assessment tool, falls risk assessment tools, moving and handling risk assessment tools, risk assessment and predictor tool following knee joint replacement and best practice in managing risk to self and others in mental health services. Each risk assessment tool has a generic function of listing hazards and identifying risks, and the principles used are the same, but each has been made specific to the clinical area where it is deployed. The NHS website has a downloadable 'healthcare risk assessment made easy' document that can be used as a template to produce a risk assessment tool. Finding this document germinated the idea of developing a risk assessment tool for playing-related musculoskeletal disorders at the school. The intention would be that it could be used to increase awareness of the five risk factors amongst a number of stakeholders, and to enable pupils and other stakeholders to notice when risks were increasing and to be able to proactively take remedial action.

4.4.3 The Significance of Stakeholders

There are many stakeholders involved in the development of the young musicians at the school. Earlier in the study, I introduced the instrument teachers and discussed the significance of their role on young musicians (2.2.6) and I introduced other stakeholders, including parents, boarding house staff, and practice supervisors (2.2.7) and illustrated the social complexity between the stakeholders in the school (Figure 3.2).

In order to maximise the usefulness of risk assessment, stakeholders need to have a working knowledge of what the risk factors are, and in order to help achieve this, I decided to include key stakeholders in the design of a playing-related musculoskeletal disorder risk assessment tool.

4.4.4 Summary

In this section I have described early and unsuccessful attempts at health promotion activities in the school between June 2013 and June 2015, and the subsequent conceptualisation of

a) designing a playing-related musculoskeletal disorder risk assessment tool for use in the school

b) including stakeholders in the design process of that risk assessment tool

as a strategy to increase stakeholder awareness of risk factors for playing-related musculoskeletal disorders and engage them in the idea of risk assessment.

In the next section I will explain the development of this into a series of focus group meetings and surveys, involving key stakeholders at the school.

4.5 Focus Group Meetings: Planning

Focus group meetings are a widely used strategy for collecting information from a group of people about a specific, and pre-determined topic. Focus group meeting follow a structured format and are led by a facilitator. They are useful for gauging the extent to which there are shared views among a group of people about a specific topic, and for exploring attitudes, perceptions, feelings and ideas about a topic (de Leeuw, Hox, & Dillman, 2008; Denscombe, 2014; Denzin & Lincoln, 2008; Rabiee, 2004).

In this section I am going to detail the convening of focus group meetings with a number of key stakeholders as a strategy to start addressing research question one (see 4.2)

4.5.1 Including Stakeholder Groups

Involving stakeholders has been widely suggested in the literature as a potentially valuable strategy (Lockwood, 1988; Norton et al 2015; Spaulding, 1988). The plan to include key stakeholders in the focus group meetings was part of a deliberate strategy with the following aims:

i) to allow me to develop better understanding of their concerns and knowledge so that I could help them to adopt recommended health promoting measures (Zaza, 1993),
ii) to increase their awareness of risk factors for playing-related injuries
iii) to engage them with the topic of playing-related injuries and with the process of risk assessment.
iv) to build and consolidate relationships with key stakeholders

The intention was that by convening multiple small focus groups comprising different key stakeholders, but using the same format and the same trigger questions, I would be using focus groups as a 'stand-alone' method of data collection (Lindlof & Taylor, 2002), to be able to see the extent of shared attitudes, feelings, ideas and perceptions not only within each

group, but also between the different groups. The use of a number of key stakeholders would also act to triangulate findings, strengthening the credibility of the project in terms of the trustworthiness framework (see section 3.2.6 and Table 3.1).

It was anticipated that this would provide insights and provide deeper understanding of the attitudes towards, and knowledge of, risk factors for playing-related injuries amongst these stakeholders. I felt this was important because the criteria that musicians have before taking action to prevent, or to seek help for, playing-related musculoskeletal health problems may be quite different from those of health educators (Zaza, 1993) and this goes some way to explain the cross cultural tensions and frustrations that I have experienced between the worlds of healthcare and music education when attempting to change attitudes to playing-related injuries

4.5.2 Selection of Key Stakeholder Groups

Initially, six different focus group meetings were planned with a number of different stakeholder groups, with the intention of

a. raising awareness of the five risk factors for injury and
b. Finding out what the different stakeholder groups knew about, thought about and felt about issues around playing related musculoskeletal disorders and their risk factors.
c. to engage them with the topic of playing-related injuries and with the process of risk assessment.
d. Triangulating findings from multiple key stakeholder groups, to reduce the effect of investigator bias and strengthen the confirmability and neutrality of the project in terms of the trustworthiness framework (see section 3.2.6 and Figure 3.1).
e. Representing as many 'realities' as possible, to strengthen the authenticity of the project in terms of the trustworthiness framework (see section 3.2.6 and Table 3.1).

The stakeholder groups selected for inclusion in this cycle of Action Research were pupils, instrument teachers, practice supervisors (because of their direct involvement with instrument playing), parents, and boarding house staff (because they are directly caring for the pupils). The academic staff at the school were not included at this point as they are less

directly linked to the practice and process of instrument playing compared with the selected groups.

Unfortunately, it proved logistically impossible to organise focus group meetings with instrumental teachers or with parents of pupils at the school. This was because the instrumental teachers all have portfolio careers, combining a variety of teaching jobs with performing. They come into the school only to teach their own pupils and then they leave. They may be on site for two or three hours or two or three days each week, and the days and times can vary from week to week. When they are in the school, their time is tightly timetabled, and then they leave to go to other work elsewhere. In this circumstance, it was simply not possible to gather instrumental teachers together to hold a focus group meeting.

It was similarly difficult to convene a meeting with a group of parents. This was largely a function of the fact that the majority of pupils board at the school, and so the parents are simply not on site very often, and when they are, they are busy and preoccupied, either delivering or collecting their children, with luggage, school work and instruments. The parents and the instrument teachers are key stakeholders and I believed that their views and contributions would be valuable and important, so I made a pragmatic decision to collect information from them via a survey. The process of the survey is detailed in section 4.7.

4.5.3 Focus Group Meetings - Method

The identification of this problem (informally, but arguably the first step in the initial Action Research cycle) was the trigger to apply for the EdD with the intention of using it to make a change. The second stage of the initial Action Research cycle, that of fact finding, began with some early scoping work between October 2011 and January 2012. This is detailed in Section 4.1. The third stage in the initial Action Research cycle, conceptualisation of the study, largely took place during the second year of the EdD, as my research aims and questions became more refined and my knowledge and understanding of research methodology and data analysis increased. In this section the method for the focus group meetings is given. The data collection was scheduled between October 2015 and January 2016, with a series of four structured mini focus group meetings each with between six and nine participants. Each of the focus group meetings was for a different stakeholder group within the school but used the same hand-outs and questions as 'triggers'. These are provided in Appendix H. The use of focus groups has been selected as a method of data collection for this part of the study as a 'standalone' method of data collection (Lindlof & Taylor, 2002).

Focus groups are useful for gauging the extent to which there are shared views among a group of people about a specific topic and for exploring attitudes, perceptions, feelings and ideas about a topic (de Leeuw, Hox, & Dillman, 2008; Denscombe, 2014; Denzin & Lincoln, 2008; Rabiee, 2004). The aim of theses focus group meetings was to find out each groups attitudes towards, and knowledge of, risk factors for playing related injury, whilst also acting as a device to raise awareness amongst the stakeholders about the risk factors for playing related injury, and provide input from them on the design of a risk assessment tool.

There are three distinct features of focus group which distinguish them from other kinds of interviews:

> 1. There is a FOCUS to the session with the group discussion being based on an item or experience about which all participants have similar knowledge.
>
> 2. The moderators role is to facilitate the group discussion rather than lead the discussion.
>
> 3. There is particular emphasis placed on group dynamics and interaction within the group as means of eliciting information.
>
> (Denscombe, 2014, pp.188,189)

It is the interaction between research participants within focus group meeting which gives researchers using this strategy the explicit use of the group interaction as research data (Kitzinger, 1994). The researcher acts as the group moderator and facilitator and is key to building a feeling of trust within the group. Denscombe (2014) advises that

> 'the researcher 'self' is kept hidden beneath a cloak of cordiality and receptiveness to the words of the interviewee'
>
> (Denscombe 2014, p.190).

The strategy of using multiple small focus groups comprising different stakeholder groups but using the same format and the same trigger questions was to enable me to see the extent of shared attitudes, feelings, ideas and perceptions not only within each stakeholder group, but also between the different stakeholder groups. All the focus group meetings took place in a comfortable room, with a 'round table' format. They were led, facilitated and moderated (Denscombe, 2010) by me, with an additional observer, whose role was to take notes about the process (Newby, 2010). The stages in the focus group meeting process are illustrated in Figure 4.2.

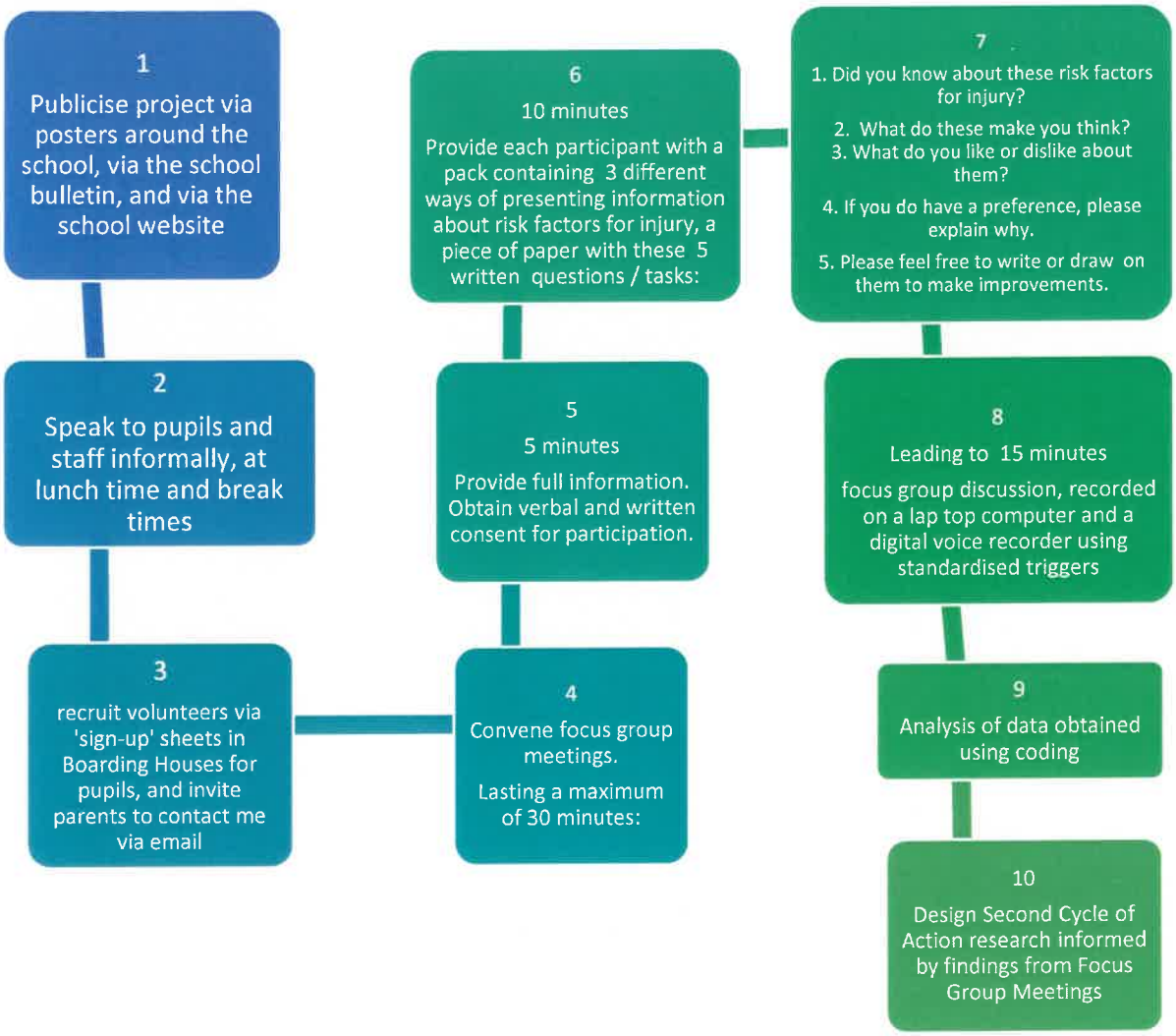


Figure 4.2 Stages in the Focus Group Meetings Process

Stages one, two and three involve recruitment of voluntary participants, stages four and five are preparing the participants, stages six and seven generate text based data to be analysed using coding (Newby, 2010). The coding structure will emerge from the data that is collected. Stage eight will generate recorded audio data in the form of speech and conversations which was transcribed and analysed using thematic coding (stage nine), and the framework for designing the second cycle of Action Research will emerge from the findings of the first cycle. Voluntary participants were recruited from the school population as illustrated in Figure 4.2.

The first two focus group meetings were with two different groups of pupils, the third was with boarding house staff and the fourth was with practise supervisors. A summary of the

characteristics of the members of each focus group, including number of participants, what their role in the school is, and particular features of each group, can be found in Table 4.3.

Table 4.3 Characteristics of the Four Focus Groups

	Stakeholder Group	Number of Participants	Features of the group
Focus Group 1	Pupils	6	To ensure anonymity the following details about the pupils in these two focus groups have been merged. From School Year 9 -13. 7 female 3 male Including: English, Russian, Singaporean, Korean, German
Focus Group 2	Pupils	4	Instruments played: Violin, Piano, Harp, Cello, Bassoon, French Horn.
Focus Group 3	Boarding House Staff	13	This was a mixture of Boarding House Parents, Residential Support Staff, & Non-residential support staff. All staff have regular weekly duties within one of the four boarding houses. All also have other duties within the school, such as academic subject teaching, teaching assistant roles within the Art Department & PE Department, Housekeeping duties, school nurse & administrative roles within the school, Many, but not all, are instrumentalists themselves.
Focus Group 4	Practise Supervisors	3	There are three practise supervisors at the school. These roles are filled by post graduate music students. Often they are having a 'gap' year before applying to Conservatoires to do a Masters level Performance Degree. They are all experienced instrumentalists. Two of them were past pupils of the school

4.5.4 About the Focus Group Meetings

The focus group meetings were planned to run between October and January 2015 with the intention of beginning to address the first research question (4.2) by raising awareness of the five risk factors. The focus group meetings were also planned to find out what the different stakeholder groups knew about, thought about and felt about issues around playing-related musculoskeletal disorders and their risk factors.

Each focus group meeting was scheduled at a time that was convenient to the participants and held in a quiet classroom within the school. This was to ensure minimum disruption for the participants, in that they had to travel very little distance to get to the room.

Chocolate biscuits were provided in the centre of the table and chairs were spread evenly around each side of the table The familiarity of the setting was deliberate and aimed to ensure that participants felt comfortable and 'at home' with the setting. The intention was that the comfort and familiarity of the setting would help ensure that the participants could be as honest as possible. This, along with the use of a standardised trigger questions, supports the credibility of the project in terms of the trustworthiness framework (see section 3.2.6 and Table 3.1).

Each meeting lasted for a maximum of thirty minutes. The first five minutes were spent with me reading a scripted introduction, obtaining verbal and written consent, and providing an opportunity to answer any questions. The next ten minutes were spent with each participant looking at and writing comments and feedback on a number of different designs of risk awareness information sheets. The final fifteen minutes took the form of a focus group discussion, using a set of standardised trigger statements and questions to provide some structure and consistency.

Each meeting was recorded using two different digital recording devices placed in slightly different positions. This was in order to have a back-up in case of failure of one, and also to give the opportunity to pick up the speech patterns from two different positions, giving two chances to be able to hear quieter, less clear or mumbled passages on transcription. The recordings of the meetings were transcribed and each transcript was then coded and analysed using emergent themes from the text (Burgess et al., 2006).

The script and trigger questions can be found in Appendix H, and a full transcript of each focus group meeting is provided in Appendix H. The findings of the data from these focus group meetings is presented and discussed in the next section.

4.6 Focus Group Meetings: Findings and Discussion

The original aim of the focus group meetings was to involve key stakeholders in helping to develop a risk assessment tool (4.4.2, 4.4.3) in order to engage them with the issues of risk factors for playing-related musculoskeletal disorders. To that end, a variety of designs of risk assessment tools were brought to each focus group meeting and the participants were given ten minutes to look at and comment on them. This generated written data about what each member liked or did not like about the design of different risk assessment tools. This proved to be of limited interest and value, generating vague and

unsubstantial comments such as 'I liked them all', so I made a pragmatic decision to not include the data about design of risk assessment tools, in order to concentrate on the rich seam of data which emerged from the semi-structured discussions of the focus group meetings. It is the findings from this dialogue-based data that is presented and discussed in this section. Of note, I completely abandoned the idea of designing a risk assessment tool during reflection at the end of the first cycle of Action Research (4.9) and in response to two 'lightbulb moments' that informed the design and direction of the second cycle of Action Research (5.1.4, 5.1.5).

The audio tapes of the four focus group meetings were transcribed and then using a process of open coding and categorisation, emergent themes were identified. There were commonalities in the emergent themes of all four transcripts as the same trigger questions had been used for each focus group meetings, however, each group had its own unique and distinct voice and resultantly, some specific differences in the themes emerged. This can be attributed to the different membership of each group, and also due to the conversational, semi-structured nature of focus group meetings which enabled discussion of different categories and themes as they emerged from different groups. This is one of the features that provides richness of data, but it also means that responses are less uniform. To aid identification of the voices of the different groups during presentation of the data, colours will be consistently used, as follows: All information from

- pupil focus group 1 will be represented as blue,
- pupil focus group 2 will be represented as red,
- the boarding house staff focus group will be represented as green
- and the practise supervisors focus group will be represented as purple.

The analysis of the coding and subsequent emergent categories and themes from the focus group meeting transcripts provided a number of useful and interesting pieces of information that deserve further discussion:

Six categories (or themes) were discussed only in focus groups comprising pupils:

- the role of Alexander Technique
- issues relating to practice rooms
- the use of social media as a means to transmit information
- the need for immediate help or more self-help in the case of injury
- that risk of playing related injury is NOT taken seriously by the pupils
- clearly expressed views on how NOT to provide information

Five categories or themes emerged from the focus group meetings comprising only staff:

- that knowledge of risk factors for injury is relevant to EVERYONE in the school
- the importance of physical fitness/ leisure/ stress reduction/ relaxation/ rest
- the importance of good communication between stakeholders
- the possible impact of pupils swapping between more than one instrument

Staff spent time discussing specific and possible mechanisms to increase awareness of risk for injury and injury prevention. These were:

- the possibility of producing a promotional video
- information could be included within the pupils 'school planner'
- information could be provided to pupils and parents before entry to the school
- information could be provided during the new pupil induction period each September

Three categories emerged from all four of the focus groups

- they did not know that growth spurts were a risk factor
- about the role of the instrument teacher
- about the role of the boarding house staff

The information that has emerged from coding and categorising the transcripts of the four focus group meetings is illustrated by Table 4.4, which shows which categories emerged from which focus groups, and the number of responses recorded for each theme.

Table 4.4 Categories emerging from each focus groups, and the number of responses recorded for each category

Theme	Pupil focus group 1	Pupil focus group 2	Boarding house staff	Practice Supervisors
Did not know about growth spurt	2	3	3	4
Knew about Increasing Practise time	4	3	11	0
Role of Alexander Technique	3	4	0	0
Role of Stress	2	0	0	0
Cumulative loading	2	0	0	0
Do you think this information is widely known through-out the school?	1	0	0	10
Do you think this information is not widely known?	2	0	0	0
Suggestion of more immediate help or more self-help being available	3	8	0	0

Table 4.4 Continued				
Can't stop practising	4	0	0	0
Fear / Guilt / Vulnerable	11	0	18	0
Role of Houseparents	2	9	10	3
Role of Parents	11	15	14	0
Role of Instrumental teachers	2	11	40	95
Practise rooms	2	16	0	0
Annual Reminder	3	0	10	0
Social Media	3	2	0	0
Practise strategies	5	3	15	0
Anatomy and Biomechanics	2	0	11	20
More proactive approach from staff about asking pupils how they are	1	0	0	0
Ways of not spreading info	3	2	0	0
not taken seriously	3	3	0	0
New repertoire	0	4	0	0
Assembly	0	2	11	5
WORKSHOPS	0	9	29	0
POSTERS	0	2	2	11
NEWSLETTER	0	1	0	0
practise supervisors	0	2	0	4
Practise	0	19	0	0
PEERS	0	16	0	0
Risk Assessment	0	0	1	0
Do you think it is relevant to people in the school?	0	0	1	4
planners	0	0	4	1
Pre entry to the school	0	0	12	3
Induction Week	0	0	11	3
Communication	0	0	2	3

Table 4.4 Continued Physical fitness / leisure / Stress Reduction / Relaxation / Rest	0	0	21	25
Promotional Video	0	0	4	2
Role of Instrument Departmental HODs	0	0	2	0
Page on Website	0	0	3	0
USP for the school	0	0	3	0
Duty of Care	0	0	6	0
Handout	0	0	1	0
Assessment	0	0	10	0
Involve ex pupils	0	0	11	0
Swapping between instruments	0	0	24	6
Warm Ups / Stretches	0	0	0	22
Physiotherapy input	0	0	0	7

Ten themes provoked the most responses from the focus group meetings, but the members of the different focus group meeting discussed the themes to varying degrees resulting in the discussions within the different stakeholder groups being, at times, markedly different in their content. The number of responses from each of the four individual focus groups for each of the ten themes is illustrated in Figure 4.3.

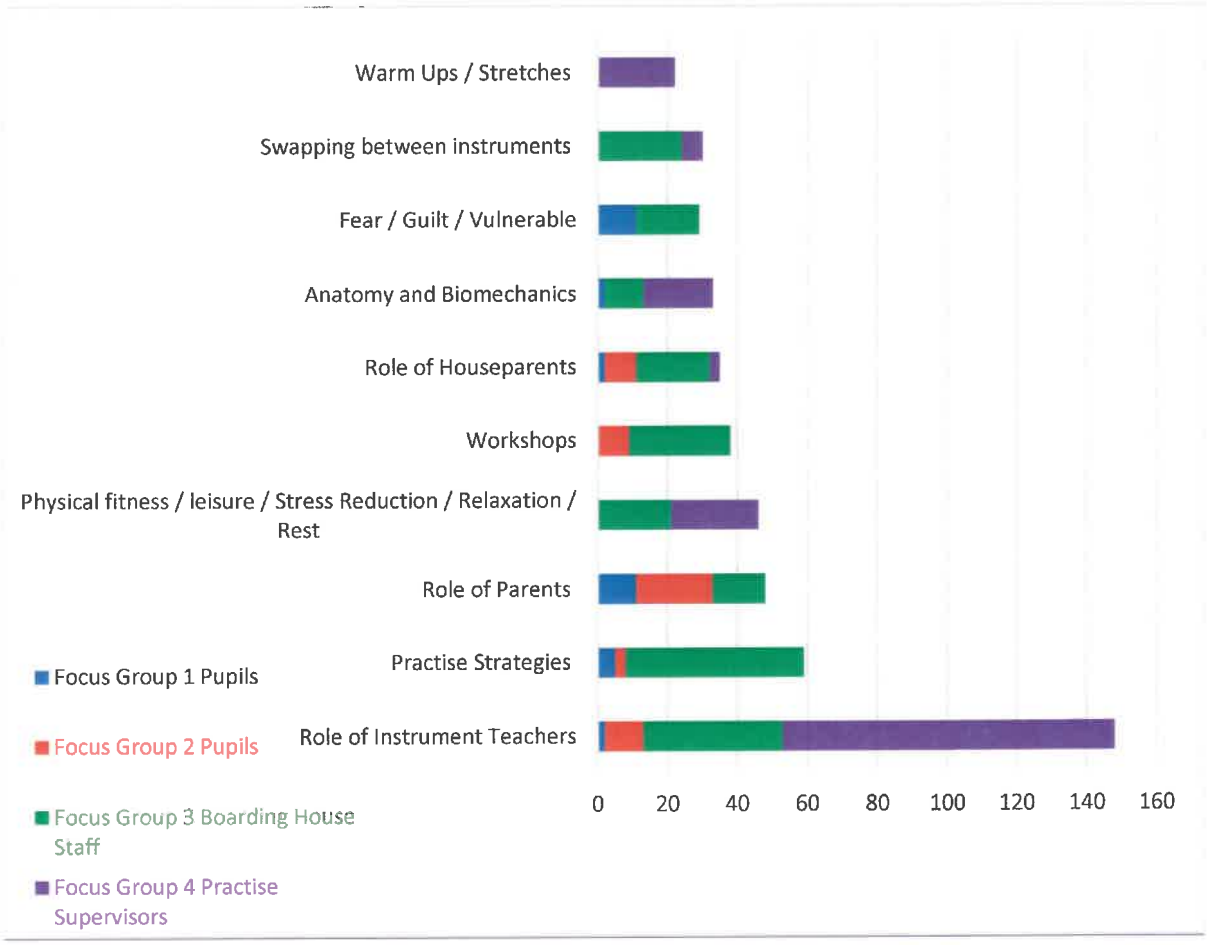


Figure 4.3 The ten themes that provoked the most responses and the breakdown of responses from each focus group.

The next part of the presentation and discussion of the findings will be based around the four themes that, based on the total number of responses, emerged as the most significant from the semi-structured discussions in the focus group meetings. I have deliberately limited my presentation and discussion to these four themes. This was a pragmatic decision based on the fact that this project was being carried out within a fixed time scale and to a fixed word count. These four themes generated over 40 responses each and have provided ample material for valuable discussion. I have selected excerpts from the transcripts to illustrate, clarify or highlight certain points and will locate the discussion in relation to the literature. The four themes are:

- The Role of the Instrument Teachers
- Practise Strategies
- The Role of Parents
- The Preventative Curriculum

4.6.1 The Role of the Instrument Teachers: Findings and Discussion

The role of the instrument teachers generated the most responses across all four of the focus group meetings with a total of 149 comments from the four focus group meetings (ninety-five comments from the practice supervisors, forty-one comments from the boarding house staff, and thirteen comments from the pupils). This is unsurprising given the breadth and depth of literature that provides much evidence for the significance of the relationship between teacher and pupil in classical western instrumental teaching, and also its influential nature (Creech, 2012; Creech & Hallam, 2011; Davidson et al., 1996; Norton et al., 2015). Additionally, admissions data from the school suggests that the visiting instrument teachers at the school are fundamental to its success with some pupils being attracted to apply to the school because of the opportunity to have lessons with a specific teacher. In one of the focus group meetings a piano student compared the difference between the response she would get if she told her parents that she had a playing-related injury and the response she would get if she told her teacher. This is shown in Text Box 7.

From 1st Pupil Focus Group Meeting: 1.00-1.45pm, November 14th 2015. Held at The School

Pupil 1:	Not all parents. There are ones who are more chilled. But like the parents who don't really know music, they're kind of like "Oh, fine. Just don't practise. Or if you have pain, just stop……But that's a bit silly because sometimes it's not just…… you can't …… just……Its more about practising right……
Pupil 2:	Yeah!
Pupil 1:	but my teacher never says to me stop. She says find out what the problem is…. If you do it again it's just gonna come back.

Text Box 7 From a Piano Student

Informed by the literature that the majority of playing related pain is due to either overuse or to technical aspects affecting posture (Abreu-Ramos & Micheo, 2007; Fry et al., 1988; Rosset i Llobet & Odam, 2007), this extract is a good example of a teacher taking a proactive approach in trying to identify the root of the problem and encouraging the pupil to problem solve and identify changes that need to be made to alleviate the problem. This concurs with literature that has explored instrument teacher perspective of health promotion in instrumental lessons and which indicated that UK teachers are appropriately placed to act as health promotion advocates, and in most cases are already doing so (Norton et al., 2015).

This is reflected in another comment from the same pupil focus group, shown in Text Box 8:

From Focus Group Meeting number 1 with pupils: 1.00 -1.45pm, November 14th 2015. Held at The School

Interviewer:	Do you think that your teacher knows about these five risk factors?
Group Answer:	Definitely Yes!
Interviewer:	Good.

Text Box 8 From Pupils in Focus Group 1

In the other pupil focus group, pupil 3 (a string player), gave an example of misinformed and potentially dangerous advice from both their previous and their current instrument teachers: the pupil was focused on the amount of practise time rather than the quality or productivity of the practise time. This is shown in Text Box 9.

From Focus Group Meeting Number 2 with pupils: 7.15-8.00pm, November 18th 2015. Held at The School

Pupil 3:	My last teacher that there's no such thing as practising too much when it comes to playing a stringed instrument or the piano. That you can practise maybe 10 hours. And it's just Ok.
Interviewer:	And what do you think now?
Pupil 3:	My teacher kind of, my current teacher is kind of similar like that..... but he'd be happy if I did like 5 hours he'd be happy. .... I think still on a stringed instrument, it's still like, you should do, like that much. A day. You definitely can't with wind instruments.
Interviewer:	Why?
Pupil 3:	Because they have their lip. I heard that from friends. That they can't do more than three hours.

Text Box 9 Misinformation from an Instrument Teacher

This simple statement, expressing the belief that for string players and pianists 'there's no such thing as too much practise' might partly explain the finding in the original audit (4.1.1) that between October 2008 and December 2011, pianists and violinists at the school had the highest incidence of playing related injuries. It is plausible that this reflects

that it was not 'common knowledge' that playing too much was possible, let alone that it was a risk factor for acquiring a playing-related injury.

Brass and Woodwind players have a natural limit of how much they can play because their embouchure fatigues. The embouchure is the system by which brass and woodwind players position their lips and surrounding facial muscles in order to produce, modulate and control the vibrating column of air used to produce sound via the mouthpiece of their instrument (Brevig, 1991). Embouchure fatigue makes it physically impossible to continue playing. String players and pianists do not have this limitation, and physically are able to continue playing even when fatigued and at risk of soft tissue injury.

These previous two excerpts show that within the sample of pupils who participated in the focus groups, there are differences both in terms of what the pupils believe their teachers know about injury prevention and in what advice instrument teachers are giving. It illustrates the significant influence that instrument teachers have on their pupils and the highlights the responsibility that instrument teachers have, individually and as a group, to provide accurate, empirically informed advice and information about instrument practise. Norton et al., (2015) established that instrument teachers do not necessarily believe that their training as musicians prepares them to deliver health promotion information, and this excerpt illustrates an example when inaccurate information is being passed from teacher to pupil. Introducing a structured in-service training programme for instrument teachers at the school would be one way of trying to promote consistency in the information given from instrument teachers to pupils. The practise supervisors were aware that the string players and the pianists seemed to be the pupils who are least mindful of the effects of playing too much. This is shown in Text Box 10:

From Focus Group Meeting with Practise Supervisors: 11.30am-12.15pm, January 4th 2016. Held at The School

Supervisor 1 I think mainly String players and pianists
Supervisor 2 Yeah.
Supervisor 3 Oh God yeah. They are the ones who get injured the most. They think they can just keep on going for ever.
Supervisor 1: Yeah. But no one can. Like an athlete can't. If you are a runner, you cannot run 7 days / week. You are meant to have a rest day.
Interviewer: Dancers have a rest day.

Text Box 10 Practise Supervisors Observations on String Players and Pianists

Supervisor 3 states that "they think they can just keep going forever". This points towards the potential benefit of developing and delivering instrument specific advice.

The boarding house staff focus group had a different perspective. As staff members who are not directly involved with music provision and are more involved with pastoral support of the pupils, they see the effects of the intense relationship between pupils and teacher which can develop in the prevalent one-to-one 'master: apprentice' pedagogy in instrument teaching, and this is shown in Text Box 11.

From Focus Group Meeting with Boarding House Staff: 10.45-11.00am. November 18th 2015. Held at The School

Boarding House Staff 1:	I must say I do get some of the girls come in in tears after a lesson sometimes. It's just being stressed out from the pressure, that they perceive as being put on them.
Boarding House Staff 3:	They are key really.....They *(the pupils)* do believe everything they *(the instrument teachers)* say. The kids believe everything.....So if they said it, they'll trust them.

Text Box 11 Comments on the intense relationship between pupils and teacher which can develop in the prevalent one-to-one 'master: apprentice' pedagogy in instrument teaching

This has been widely examined in conservatoire-based literature but has not yet been explored in pre-conservatoire settings. These findings, through the focus group meetings at the school, echo the findings from conservatoire research (Creech, 2012; Gaunt, 2008; Gaunt, 2010; Gaunt, 2011; Howe and Sloboda, 1991), about the relationships that develop in one-to-one pedagogy, and the impact of this particular dynamic on musical development of learners.

The focus group meeting with the practise supervisors revealed another dimension. The practice supervisors are young adults who are already skilled musicians themselves. Two of them were alumni of specialist music schools, all had studied music at undergraduate level in a conservatoire or university setting and all three were applying for post-graduate performance courses. They each had personal experience of being taught in a one to one setting by an instrument teacher and were able to reflect on their own experiences of this. They also had maturity and experience of learning with a variety of teachers. This group, more than any other, spoke about the influence of the instrument teachers on the pupils within the school and about instrument teachers generally. For the purpose of this study, I am

focusing on what emerged from them about injury prevention. The next extracts, shown in Text Box 12, illustrate some of their thoughts, feelings and experiences about the intense relationship that can develop in this setting and about how this intensity makes the instrument teachers the ideal people to present injury prevention information to the pupils (Norton et al, 2015).

From Focus Group Meeting with Practise Supervisors:11.30-12.15pm, Jan 4th 2016. Held at The School

Interviewer:	Is the instrument teacher the 'go to' person for everything?
Supervisor 3:	Yeah
Supervisor 1	Yeah
Supervisor 2	For everything actually.
Supervisor 3	When it comes to proper practise rather than just playing, they always go to their instrument teacher.
Supervisor 1	I think that's quite unhealthy. Its unhealthy because when people get to the upper sixth they.... they.....they'll choose their music college based on "Oh, where does my teacher teach.... 'cos I need to keep with that person". I think, like, it's important to really have a good relationship with your teacher but.... I think people get too close to it here.
Supervisor 3	Yeah
Supervisor 1	And think they're God. Like. It's just....so....I just think....Personally....I think....Cos I've had lots of teachers and I've really enjoyed that, and had lots of different points of view....And like... I just.... I'd hate the feeling of, 'Oh, Marcus, I need you'. I would hate that feeling of being closed in. I think it's very negative.
Interviewer:	How can we get that information about risk factors out there?
Supervisor 1:	I think to a certain point teachers tell their students some of the risk factors. But they don't usually tell them until the child says "I'm sort of getting a pain"...
Supervisor 2:	Yeah and then it might be too late
Supervisor 1:	Yeah
Interviewer:	So it's more reactive than proactive?
All:	Yeah Yeah Yeah
Interviewer:	So do we need to....
Supervisor 2:	I think teachers are the main...
Interviewer:	.....talk to the teachers?
All:	Yeah. Yeah. Yeah
Supervisor 1:	'cos they (the pupils) will listen to their teachers and take it in.

Text Box 12 Practise Supervisors thoughts, feelings and experiences about the relationship between the instrument teachers and the pupils

For instrument teachers to provide current information about injury prevention to pupils has wide support from literature; Blackie et al (1999), Chesky et al., (2006) and Spaulding (1988) advocate that health promotion should be included in musical education from the earliest lessons, Smilde (2005), identified music teachers as being ideally placed to actively model lifelong learning strategies, Zaza (1993), who observed that pupils are more likely to adopt behaviours endorsed by their teacher, and Lockwood (1988), who suggested that instrument teachers should include upper limb strength and conditioning exercises as an 'integral part of learning to play an instrument' as a means of reducing the prevalence of playing-related injuries.

All four focus groups spoke about instrument teachers at length and the consensus across all the focus groups is that the instrument teachers are the stakeholder group with the most influence on pupil behaviour.

This places instrument teachers in a uniquely powerful position to be able to influence pupil awareness of, and attitude towards injury prevention and this concurs with historic recommendations (Blackie et al., 1999; Chesky et al., 2006; Zaza,1993), and with recent findings by Norton et al., (2015).

However, it is apparent that information given by instrument teachers about injury risk is not always accurate or true. It also places the school in the uncomfortable position of employing staff who are not engaged with delivering evidence based best practice. I strongly recommend that a series of compulsory in-service training sessions are developed for instrumental teachers at the school, with the intention of ensuring that all of them have the same knowledge about risk factors for playing-related injuries.

4.6.2 Practise: Findings and Discussion

The second most commonly talked about theme across all four focus groups was linked to instrument practise. This generated 59 separate comments across the four focus group meetings. This is unsurprising given the context: instrument practise is key to progression towards becoming skilled instrumentalists and instrument practise is, necessarily, highly regarded by the school, with practise sessions embedded within the individual timetable of each pupil. While the focus group meetings generated a significant amount of

useful and interesting data, there is very little literature that has looked at 'instrument practise' directly in relationship to young musicians.

Younger pupils at the school have daily, timetabled practise sessions supervised by the designated practise supervisors. Within a boarding school environment, this strategy appears to inadvertently mimic the model of parental involvement with practise, found to be a significant factor in the success of young instrumental musicians (Davidson et al., 1998; Davidson et al., 1996).

Older pupils are encouraged to take responsibility for their own practise and are not supervised by school staff. The focus group meetings found that older pupils practise behaviour is influenced by their peers.

The excerpt shown in Text Box 13 illustrates the influence of peers on attitudes toward quantity of practise rather than quality of practise, which in turn influences pupil attitude and behaviour towards playing with pain.

From Focus Group Meeting number 1 with pupils: 1.00 -1.45pm, November 14th 2015. Held at The School

Pupil 1:	.....everyone else is practising.. but what I find difficult you see....what I find really difficult..... if I go to NMB (new music block) top floor and I'm practising for one hour and I came in with my friend, and I have enough practise time. One hour is enough because I can actually do a very concentrated practise for one hour, and then my friend is playing for another 2 hours, now I will feel bad because
Pupil 2	you can feel guilty
Pupil 1	Even though I have a pain, or for example haven't practised for 2 days, and couldn't do such practise, or whatever, and I listen to my body and I, like, stop, the other person kind of tells you.... You know..... it's a bit like.....We need to maybe work on our personal, you know.....to work personally

Text Box 13 Illustrating the influence of peers on attitudes toward quantity of practise rather than quality of practise

The comment from pupil 1 illustrates the tension that can arise between 'listening to your body' which might be telling you to stop playing, and the influence of peers, who might be encouraging (either overtly or inadvertently) the pupil to continue to do more practise.

I found no literature about the direct influence of peers on attitudes towards instrument practise, but there is literature which demonstrates that young musicians have

already developed the belief that it is acceptable to play with pain (Lockwood, 1988; Shoup, 1995). It is possible that pupils are responding to seeing these attitudes and behaviours modelled by professional musicians, in a culture in which there is effectively a cloak of secrecy and silence round the issue of playing related injuries (Rickert et al., 2014; Spahn et al., 2002), and a 'show must go on' mentality (2.2.3.3).

The practise supervisors were aware that the string players and the pianists were the pupils who are least mindful of the effects of playing too much, and this is shown in Text Box 14:

From Focus Group Meeting with Practise Supervisors:11.30-12.15pm, Jan 4th 2016. Held at The School

Supervisor 1	I think mainly string players and pianists
Supervisor 2	Yeah.
Supervisor 3	Oh God yeah. They are the ones who get injured the most. They think they can just keep on going for ever.
Supervisor 1:	Yeah. But no one can. Like an athlete can't. If you are a runner, you cannot run 7 days / week. You are meant to have a rest day.
Interviewer:	Dancers have a rest day.

Text Box 14 Practise Supervisors thoughts on string players and pianists

Supervisor 3 states that string players and pianists "think they can just keep going forever" demonstrating lack of knowledge about the importance and benefit of rest and recovery for muscles.

Pupil 3 was a member of the lower half of the school. The comment in Text Box 15 shows that their understanding is blurred between the discomfort sometimes experienced because of the physical demand of learning something with a new technical challenge (such as a new stretch) which is not problematic, and continuing to play whilst in pain because of overuse, which is potentially harmful.

From 1st Pupil Focus Group Meeting: 1.00-1.45pm, November 14th 2015. Held at The School

Pupil 3:	I don't think, erm, stopping practise should be encouraged because I think it is essential...like....if there's large intervals which you are practising which aren't familiar to you, it's going to stretch.

Text Box 15 Comment from Young Pupil in 1st Focus Group Meeting

This highlights the need for the guidance and information that is presented to pupils to be clear, consistent, accurate and also age appropriate.

Pupil 4, who was in the upper sixth form (school year 13) and had been offered a place at a conservatoire for the following academic year, showed more maturity and independence in her thinking, highlighting the appropriateness of upper school pupils not needing to be supervised in their practise. She was able to take sensible and appropriate steps to prevent an overuse injury from occurring when she started at the school in year 12. This is illustrated in Text Box 16.

From 1st Pupil Focus Group Meeting: 1.00-1.45pm, November 14th 2015. Held at The School

Pupil 4: When I started last year I was doing an hour and a half practise each day and it went up to 4 hours a day. So. I didn't get injured, but I started to get some pain in my wrist.... which...so ...then I realised I had to be a bit careful.....maybe it would have been more sensible to up it gradually... just take more time....

Text Box 16 Maturity Shown by Year 13 Pupil

In my clinical work at the school, I have observed that the first term at the school is one of the points at which pupils are particularly vulnerable to potential over-use injury, as they increase the amount of playing they are doing. This extract demonstrates this from a pupil perspective and suggests that the school could more effectively guide and support pupils during their first term at the school.

There is a very definite emphasis on quantity rather than quality of practise, and I found no literature referring to directly to pre-conservatoire pupil insight into quality of practise above quantity. There is literature which looks at behaviour within one to one pedagogy in conservatoire instrument tuition, and which refers to the passive role in learning and development that some conservatoire pupils adopt within one to one pedagogy scenarios (Gaunt, 2008; Gaunt, 2011). The gap in the literature about views on quality of practise from pre-conservatoire musicians was reflected in the data gathered from the focus group meetings: only two comments arising from the pupils focus group meetings refer to quality of practise, rather than quantity. Text Box 17 illustrates how, on arrival at the school, pupil 6 was encouraged to increase the amount of practise time, even though they had previously been happy with 90 minutes of focused practise daily.

From 1st Pupil Focus Group Meeting: 1.00-1.45pm, November 14th 2015. Held at The School

Pupil 5:	Quality is important. Because 3 hours of playing……I had a masterclass and he said 3 hours of really concentrated practise is better.
Interviewer:	Yeah. Absolutely. I agree.
Pupil 6:	Before I came here I was doing like an hour and a half a day of very disciplined practise. And that was fine because I was thinking about how I practise, rather than about how long I practise.

Text Box 17 Practise - Quantity or Quality?

This hints at a shift in emphasis from quality of practise, to quantity of practise, in response to the expectations and demands made by the school. It seems possible that the anxiety that pupils evidently feel about 'not playing enough' or about 'having to stop' could be diminished if they are given alternative strategies, such as visualisation or mental imagery techniques to practise (Driskell et al., 1994). This allows physical rest and recovery, while enabling musical progress.

Text Box 18 shows the tension felt by pupil 4 whose mother and teacher had different views about how to practise successfully, and revealed her strategy for avoiding conflict between the two:

From 1st Pupil Focus Group Meeting: 1.00-1.45pm, November 14th 2015. Held at The School

Pupil 6:	You just have to do what works for you
Pupil 4	My mum and my violin preach different methods of practise.
Interviewer:	OK
Pupil 4	So while I'm at school I do like how my violin teacher would want me to practise. But while I'm at home, my mum doesn't let me practise like that, and she annoys me. She works anyway. So it's OK. But she's like "slow practise only". But my violin teacher thinks not needed. Ever. She thinks that intermediates speed of practise is the best.

Text Box 18 Parent or Instrument Teacher?

This also illustrates the transfer of loyalty from parent to teacher which developed once the pupil joined the school and is one example of the significant influence that the teachers have.

The focus group meeting with the boarding house staff generated new discussion and awareness about the expectations about practise that are placed on the pupils.

Text Box 19 illustrates a staff member recalling a young pupil who developed an overuse injury in the first term at the school. It is an example of a pupil that we all remembered well, as she had been successfully helped and supported to productively manage a period of time when she had been unable to play because of an overuse injury, acquired during her first term at the school.

From Focus Group Meeting with Boarding House Staff: 10.45-11.00am, Nov 18th 2015. Held at The School

Boarding House staff 4:	Sarah, I know you often say to pupils who come along, to visualise, and I think that's something they find quite hard to take on board initially: That they CAN still practise. There are OTHER ways of practising. There are other ways without PHYSICALLY doing it.
Boarding House Staff 3:	Pupil X is a classic
Boarding House Staff 4:	Yes
Boarding House Staff 3:	Cos she came in and she completely destroyed herself....within a couple of weeks, wasn't it?
Interviewer:	Yes
Boarding House Staff 3:	Then once we got her, and it was hard work getting her to stop, wasn't it? She stopped (playing) for a term, or something like that. And she visualised. And the change in her musicianship was enormous. And she reaped the benefits of stopping.
Interviewer:	So She found useful things to do?
Boarding House Staff 3:	Yes she was lucky as she had this Spotify account. And she went off and she spent every practise session developing her repertoire and thinking about it and that was such an important.....
Boarding House Staff 6:	..... But unless they know how to do that, at such a young age .....
Boarding House Staff 3:	.....Yeah.....

Text Box 19 Successful Support for an Injured Young Musician

As the focus group meeting continued, one boarding house staff member showed insight into the more proactive role that they could play in injury risk management, and that perhaps current practice needs to be reviewed. This is shown in Text Box 20:

From Focus Group Meeting with Boarding House Staff: 10.45-11.00am, Nov 18th 2015. Held at The School

Boarding House Staff 3: What we see in our house, is kids come in, particularly with juniors, having done a lot less practise than they are expected to do here. Part of me wonders whether it's not just about saying "watch out for these signs" but we need to look at .....well effectively at the moment they are expected to go into a room and practise for 3 hours a day, erm, and what we don't really allow, is for them **not** to practise. If they are injured they have to have a note from you *(Nurse)* or you *(Physio)* and at that point, they really **are** allowed to not take part, erm, and we perhaps should be providing the opportunity for them to say "I've done this" or "I've done this".... erm....that they can allow them to stop because ours come in, and they might have done an hours practice a day: for an 8, 9, 10, year old, an hour separates down, and that would be about normal ..... and they come to us and are expected to do three. And that's a little bit over your 25% increase.

Interviewer: It is. It's a huge increase.

Boarding House Staff 3: Yes.....

Text Box 20 Insight from Member of Boarding House Staff

I felt as though I was observing a 'real-time' change of awareness and a change of thinking during the process of the focus group meeting, about how the boarding house staff could help pupils. In addition to the idea of in-service training about injury prevention for instrument teachers, the impact could be augmented by developing a similar in-service training programme for other key stakeholders such as the boarding house staff and the practise supervisors.

4.6.3 The Role of Parents: Findings and Discussion

The role of parents was the theme that generated the third highest number of responses in the focus group meetings, with a total of forty-eight comments: fifteen from the boarding house staff, and thirty-three from the pupils. This represents the topic that generated the highest number of responses from pupils: 33/48 (69 per-cent) of the total responses mentioning parents were from pupils. This compares with 13/148 (9 per-cent) of the responses from pupils about the influence of instrument teachers, which generated the highest number of responses overall (Figure 4.3). There were no comments about parents from the practise supervisors. This is probably a reflection on the different roles that the two staff groups within the school. The boarding house staff are a 'first point of contact' with the parents, while the practise supervisors have no official role in liaising with parents.

Literature about the role of parents in the development of young musicians is limited. There is a single study that has surveyed attitudes and practices of parents of teenage musicians to playing related health issues (Ackermann & Driscoll, 2013), and a handful of studies that have looked directly at the role of parents (Davidson et al., 1996), at factors in the success of young musicians (Davidson et al., 1998) and at young musicians accounts of significant influences in their early lives (Howe & Sloboda, 1991). I could find no literature that explores, explains, supports or refutes many of the comments about the role of parents generated from the focus groups and this reflects the unique nature of this research in a pre-conservatoire specialist boarding school.

Comments that emerged about the role of the parents can be broadly divided into two themes:

- parental involvement that is negative, hindering or impeding the pupils progress in some way,
- parental involvement that is positive, with pupils grateful and appreciative of parental involvement and support.

In this section, using literature when applicable, I am going to discuss the findings from each stakeholder group of the focus group meetings, beginning with the boarding house staff.

The boarding house staff have a unique role in the lives of the boarding pupils at the school. They are very much an interface between home-life and school-life, and between parents and other staff. Resultantly, they had some unique insights into the role that parents have in the development of their children as young musicians. Families have often invested significant amounts of time, money and other resources to assist their child with learning an instrument and this can add to the pressure felt by pupils. An example of this is shown in Text Box 21.

From Focus Group Meeting with Boarding House Staff: 10.45-11.00am, Nov 18th 2015. Held at The School

Boarding House Staff 6:	And I think there is another problem related to that and that is, this particular young man, when it was happening to him, it was being compounded by his parents, because they were scared he would lose his place, because they could hear him practising and he was playing flat the whole time to start with, and for him, that destroyed his whole purpose and reason for being here. He's not a very confident boy anyway, urm, and cos mum and dad were scared as well, everywhere he went people were frightened of something. And I think we need to educate parents as well.
Boarding House Staff 1:	that's what I was just saying. When we have one of these induction days in June when all the parents come. of new, incoming pupils?.....New pupils come with their parents....it would be a good idea for you to stand up and explain to parents

Text Box 21 Example of Parental Pressure felt by a Pupil

The boarding house staff discussed the potential benefit of me talking to parents prior to their children joining the school, in order to highlight the potential risks for injury and to inform them of the help available to pupils if they did get injured. This practical suggestion of another mechanism of accessing the parents and providing them with accurate health promotion information and injury prevention information was taken forward and included in the second cycle of Action Research (5.4.3.2).

The pupils in the first pupil focus group talked at some length about their feelings towards their parents involvement in their music, and there were clear differences between having parents who are musicians, and parents who are not musicians:

Text Box 22 illustrates contrasting feelings from two different pupils: Pupil 4 had parents who were both professional musicians and who had provided her with significant support during her time prior to coming to the school in the sixth form. She displays evident warmth towards her parents and their involvement with her music making, and seems to feel supported and appreciative. In stark contrast, pupil 3 seems hostile towards any attempted input from his parents, and clearly keeps them very separate from his music making. He also displays a disconnect between anything to do with his instrument and advice about risk factors for injury. He concludes that he doesn't want his parents to be involved. This is contrary to the findings of Davidson et al., (1996) and Howe & Sloboda (1991).

From 1st Pupil Focus Group Meeting: 1.00-1.45pm, November 14th 2015. Held at The School

Interviewer:	So OK. Do you think parents know about this stuff?
Pupil 4:	It depends who your parents are. My parents are both musicians, so they probably know more than .....
Pupil 6:	more than my parents...
Pupil 3:	Some people don't want their parents to interfere with their musical life....
Interviewer:	OK. Why do you think that?
Pupil 3:	Well that's just my personal view. Not necessarily other people. Like, if my parents said anything about practise or came and helped me with practise
Interviewer:	Do you think your parents ever would come and help you with practise?
Pupil 3:	It happened.
Interviewer:	OK
Pupil 4:	Oh right.... I've had a really different....like.....I don't know....Both my parents are musicians
Interviewer:	What do they play?
Pupil 4:	My mums a xxx-ist and my dad plays the xxxxx.
Interviewer:	Ok.
Pupil 4:	And.. Yeah. And, er..... I don't know. Maybe it's just because I have a really good relationship with them. But. Well. My mum used to practise with me every day. Like I used to wake up at 6.30 and practise before school. Um. And then my dad would help me with practise as well...but it was mostly my mum. Um. But now, obviously I'm here, so she doesn't help me practise, but when I go home, she'll help. Like, if I want help, she'll help me. And so will my dad. They'll hear me playing and stop to say something.
Interviewer:	OK, X, why do you keep your parents apart from that?
Pupil 3:	Like. I don't know. I guess it depends on how you came into music. Like. Um. Cos my parents aren't musicians and it's kind of something I've done myself. Like. I don't want, like at home, if they tell me to practise I literally just can't. Like. If they say practise, I cannot practise. I just physically can't do it.
Pupil 5:	Yeah. My parents always comment on my playing. Like they know about music.....
Interviewer:	Are they not musicians.
Pupil 5:	No.
Pupil 4:	I'm glad I can just, like, practise. But I guess I haven't experienced it.....but I like to be independent.
Pupil 5:	Yes. If my parents were musicians it would be different.

Continued

Continued

Interviewer:	So. If the relationship between you and your parents affects how they think about advice they give, if they knew about risk factors for injury and started talking to you about them, would you just stop listening? Or would you listen?
Pupil 3:	Well it's pretty different because it's not to do with, like, instrumental, like, music. But..... I think....I wouldn't like it because ...er....just generally. I wouldn't want.... I don't want them to be (like) involved.

Text Box 22 Contrasting Examples of Pupil / Parent Musical Relationships

Pupil 4 had parents who were involved in her music making and she appeared to feel supported and was appreciative. In stark contrast, pupil 3 seems hostile towards any attempted input from his parents, and clearly keeps them very separate from his music making. He also displays a disconnect between anything to do with his instrument and advice about risk factors for injury. He concludes that he doesn't want his parents to be involved.

'The role of parents' generated a large number of comments from boarding house staff and from pupils. The boarding house staff made practical suggestions about engaging the parents with information about risk factors for injury and injury prevention, and understandably, the pupil comments focussed on the direct relationship between their parents and their own music making.

4.6.4 The Case for a Preventative Curriculum: Findings and Discussion.

The first finding to be discussed in relation to the case for a preventative curriculum, is that the combined topics of the role of physical fitness, leisure, stress reduction, relaxation, rest and recovery generated the fourth highest number of responses in the focus group meetings. Each of these topics links directly to the physical and mental health and well-being of pupils, and to injury prevention as both increased physical fitness and stress reduction reduce the risk and the incidence of playing-related injury.

I have already highlighted that physical education is a low priority on the timetable and within the budget. and that the facilities for physical exercise at the school are inadequate (1.2.1). Lack of comment from the pupils could be an indication of its low priority for the pupils who took part in the focus groups. However, the case for increasing physical activity and encouraging a more balanced lifestyle, with stress reducing strategies and leisure time, is all part of developing a 'preventative curriculum'.

Significantly, all of the responses emerged from the focus groups with staff and not from the pupil groups. Lack of comment from the pupils is indicative of the focus of their endeavours, which is to become a musician. They are often focused to the point of being blinkered: unable to see a broad path to their objective, and from my experience with the pupils, they can often feel frustrated if they are distracted by, or if their time is taken by activities that they perceive not to be linked to their music making.

Text Box 23 shows the practice supervisors expressed frustration at the situation:

From Focus Group Meeting with Practise Supervisors:11.30-12.15pm, Jan 4th 2016. Held at The School

Supervisor 3:	And they don't know about exercise physiology, or what effect warming up has on the body in sport, and so they can't apply it to music, cos they don't have it from sport, because they don't do enough of that here either.
Supervisor 1:	I know, I know.....
Interviewer:	So. Any road.
Supervisor 1:	I think people are always afraid to change. And I mean that...everyone... staff...not just the kids...
Supervisor 2:	I think it's human nature. Change is hard, isn't it?
Supervisor 1:	But it's so annoying. Just so annoying. Why can't people just be open minded?
Interviewer:	I think dance is, I don't mean instead of PE, but dance as a form of exercise is an obvious one
Supervisor 1:	Especially at a music school.... Duh! ... Yeah...!
Supervisor 2:	I think dance would be ...would be good...
Supervisor 1:	Yeah. Completely...

Text Box 23 Practise Supervisors Frustration

The importance and relevance of care of the physical self stems from the sheer physicality of instrumental playing at a high level, comparable with elite dancers and athletes (Kreutz et al., 2008: Watson, 2009).

Kreutz et al., (2008), suggested that 'fitness for players' modules in conservatoires, should emphasise the importance of physical fitness generally, paying particular attention to posture, and upper limb use, and focusing on the prevention of fatigue, while Ackermann et al., (2002) have shown that endurance training significantly reduced the perceived exertion of

playing in a cohort of undergraduate music students. In more recent work with professional orchestral players Chan et al., (2013), have found that implementation of a specifically designed exercise programme reduced the frequency and severity of playing-related musculoskeletal disorders in orchestral musicians. All this strongly points to the benefits of introducing a structured and carefully named 'fitness for players' module at the school, as recommended by Kreutz et al., (2008), emphasising the importance of physical fitness generally and paying particular attention to posture and use of the upper limbs, while focusing on prevention of fatigue, through endurance training (Ackermann et al., 2002).

The benefits to their instrumental playing should be overtly emphasised rather than just labelling it as 'PE'. Many young musicians and their parents display concerns about the risk of getting injured while participating in sporting activities, but reassurance can be given by findings that being involved in vigorous-intensity physical activity such as running, fitness training, swimming, yoga and dancing did not correlate to more injuries (Baadjou et al., 2015).

The boarding house staff expressed frustration at the lack of facilities and resources at the school, that are directly aimed at reducing stress, and increasing fitness and wellbeing, with the inadequate PE facilities and lack of outside play spaces (1.2.1) being discussed by the staff groups, with boarding house staff showed a more holistic awareness of some of the difficulties with addressing levels of fitness in the pupils, while acknowledging its importance. This is shown in Text Box 24:

From Focus Group Meeting with Boarding House Staff: 10.45-11.00am, Nov 18th 2015. Held at The School

Boarding House Staff 4: The other factor, I think, is getting them fit. Again I think when they come to the school, that sport or physical exercise is something they enjoy, or could enjoy, like in any school if they try and get out of it, like in any school, erm. But they've got to be educated.....about the importance of keeping fit.

Boarding House Staff 1: When I started taking them running it took me a week to be able to get 2 of the girls to be able to run one lap of the field without having to walk.

Continued

Continued

Boarding House Staff 2:	It's bad. It is really bad actually. I know it's really trivial but... fresh air..... there's no seating outside.... well hardly any seating outside.....and I think getting out and just being able to just be outside. It's so nice just to sort of open out. You feel like you're not being crushed by something
Boarding House Staff 4:	So their well-being.... And then hopefully that reduces stress levels that might be coming from other areas
Group:	Yeah / Yes.
Boarding House Staff 5:	But that brings us back to the thing.....as musicians keeping fit is just part of it.

Text Box 24 Boarding House Staff Frustration at inadequate PE Provision

We already know that the developing field of performing arts medicine identifies injury prevention teaching as a priority for those involved with music education (Rickert et al 2013; Williamon et al, 2009). The pre-conservatoire specialist music school is an ideal setting to introduce a preventative curriculum comprising evidence-based knowledge and good practice in the care of pupils physical and mental health, from the earliest stage in their musical development. This is advocated by Ginsborg et al., (2009), and by Ginsborg, Spahn and Williamon (in Macdonald et al., 2012), in order to prevent injury and avoid other disorders, and also to enhance health and wellbeing.

4.6.5 Summary

In this section I have discussed findings from the four main themes that emerged from the focus group meetings. The themes were: i) the role of the instrument teacher, ii) practise strategies, iii) the role of parents, and iv) the case for a preventative curriculum.

First, the role of the instrument teacher was a highly emotive topic generating almost three times more responses than the other three topics. The instrument teachers are considered by the boarding house staff and by the practise supervisors to be the stakeholder group with the most influence on the pupils, and therefore we should aim to enable them to be provide accurate and timely information to the pupils about playing-related injury prevention. This will require an improvement in communication and an increase in instrument teacher engagement with the topic. The boarding house staff observed that they had noticed that there are different physical demands and different risks associated with

playing different instruments and this highlights the potential benefit of developing some instrument-specific injury prevention advice.

Second, practise strategies generated 59 responses, with comments coming from all four of the focus groups. There was, however, a difference between the groups in what they talked about in relation to practise: Pupils focused on the amount of time spent practising, including the significant influence of peers on attitudes towards the amount of time spent practising. This highlights the potential positive influence that peers could have if a critical number adopted healthy practise techniques. Pupils also spoke about the quality of and availability of practise rooms. This is unsurprising given that practise is fundamental to their musical development and practise rooms are used on a daily basis.

Staff groups spoke about the possibility of developing alternative practise strategies, including 'off-instrument' techniques such as visualisation or imagery, as a mechanism to rest the body while continuing to practise or rehearse.

Staff groups also discussed how pupils are vulnerable to overuse injury when first starting the school, because of a sudden increase in playing time. Many could remember specific examples of this. They suggested the potential benefit of providing information sessions prior to pupils enrolling at the school and during new pupil induction sessions. New pupils should be overtly encouraged and supported by staff, to increase playing time gradually.

Third, the role of parents generated 48 responses from pupils and boarding house staff. Boarding house staff discussed the potential benefit of involving parents prior to their child starting at the school. They suggested talking to parents about risk factors for playing related injury and about the help that is available at the school, at the new pupil induction afternoon which takes place in the June prior to pupil enrolment the following September.

Fourth, the case for a preventative curriculum emerged through discussions in the boarding house staff group and the practise supervisors, about levels of physical fitness in pupils at the school, about the extent of curricular and extra-curricular provision of physical activity, about leisure activities and about stress relieving strategies.

The boarding house staff acknowledged the relevance and potential benefits of developing PE provision, encouraging increased participation in a range of physical activities, and explicitly increasing levels of physical fitness in the pupils. Not only could this reduce the risk of playing-related injuries, but it could provide the additional potential benefit

of being helpful for reducing pupil stress, improving pupil behaviour and increasing pupil concentration.

The focus group meetings provided useful information about four key topics. They highlighted different perspectives from, and priorities of, the different stakeholders in the focus groups, and the information that emerged, along with information from the Surveys (4.7.5 and 4.7.9) will inform the second cycle of Action Research.

4.7 Surveys

As described in section 4.5.2 it was not possible within the time scales that I had, to organise focus group meetings with a group of the instrumental teachers or with a group of parents of pupils at the school, but as each of the pupils at the school has contact with at least one instrument teacher twice a week, and as the instrument teachers are so influential (Creech, 2012; Gaunt, 2010; Gaunt, 2011), and ideally placed to advocate for health promotion and injury prevention in young musicians (Norton et al., 2015), to include the instrument teachers within any attempt at changing attitudes and behaviour seems obvious, necessary and prudent. Despite not being available for participation in focus group meetings, I still considered them to be key stakeholders and I valued their views and considered that their contributions would be important and influential, so I made a pragmatic decision to collect information from them via a survey.

Surveys are a useful tool for gathering information from individuals using a questionnaire. They offer confidentiality and anonymity to participants (Wilson 2009), which can give respondents confidence and be reassuring if the topic area is sensitive or contentious. They are also straightforward to administer. There are a number of important considerations about surveys and their use: the first is that the usefulness of any survey is determined by the quality of questions (Wilson 2009). The second is that the response rate and corresponding non-response rate can introduce a bias to the answers provided. These will now be discussed in general terms and also directly related to the surveys used in this study.

4.7.1 Questions

I elected to use SurveyMonkey to construct and distribute the questionnaires. SurveyMonkey is online software which is straightforward to use and ideal for distributing to

a group of people via email. An electronic link to the survey is provided in the email making it easy for respondents to submit answers.

In order to maintain consistency between the information gathered from the focus groups and the surveys, the questions used in the surveys were based on the questions used in the focus group meetings. Care was taken to expand on and explain the terms used within the questions (Fowler, 1995), They were read by a critical friend, as recommended by Wilson (2009) who was tasked with looking for poorly worded or ambiguous questions. Minor amendments to the wording of one question was made following this process, and then the surveys were piloted on three colleagues within the school. This was to test not only the content in terms of the questions, but also to test the process and the ease of use via an electronic link. This description of the survey is intended to make the surveys replicable, and so increases the dependability of this project, in terms of the trustworthiness framework (see section 3.2.6 and Table 3.1). A copy of the questions in each survey is in Appendix J.

4.7.2 Response and Nonresponse

The success and validity of any survey is dependent on the targeted participants responding to and participating in the survey. In this brief section I am going to introduce the issue of 'nonresponse' in surveys.

The phenomenon of 'nonresponse' is common, affecting even the most well-resourced surveys, carried out by organisations experienced with survey methodology. It can be considered to be a fundamental aspect of survey research (de Leeuw et al., 2008).

Nonresponse occurs when there is a failure to obtain information from a person or group of people who are part of the sample being surveyed, when it is referred to as unit non response. Nonresponse can also be failure to gather information about part of the survey because one or more questions was not answered. This is referred to as item non response.

Non response can occur for a variety of reasons

i. Failure of the data collector to locate/identify the sample unit
ii. Failure to make contact with the sample unit
iii. Refusal of the sample unit to participate
iv. Inability of the sample unit to participate

v. Inability of the data collector and the sample unit to participate

vi. Accidental loss of the data / questionnaire

(de Leeuw et al., 2008)

There are well documented strategies aimed at maximising response rates and the reasons listed above serve as a useful prompt for ensuring strategies used to maximise response rates target the most common reasons for nonresponse.

The issue of response and nonresponse is well documented and well researched, and is beyond the scope of this section, except to highlight that whatever the type or extent of the nonresponse, or the reason behind it, nonresponse to surveys must be acknowledged and be clearly reported via a response rate figure (de Leeuw, et al., 2008).

In the next sections I am going to provide information about the structure and target population of the parent survey, and then state the key findings, before giving information about the structure and target population of the instrument teachers survey and then state the key findings.

4.7.3 Parent Survey - General Information

This was a short survey which was compiled and distributed using SurveyMonkey software. The survey comprised five questions designed to find out

- what the parents knew about risk factor for playing-related injuries,
- if their child had reported pain as a result of playing,
- what they knew about what resources were available to the pupils from the school, to help treat playing related injuries, and
- if they felt the school could be doing more to work towards injury prevention.

4.7.4 Parent Survey - Method

It was piloted on three colleagues of mine who have children who play instruments. A combination of closed and open questions is useful: Floyd (2009) suggests that closed questions are useful with self-administered questionnaires for providing consistent data, while open questions in self-administered questionnaires with no interviewer or facilitator to

probe answers, can produce useful anecdotal insights. With this in mind, the Parent Survey comprised three closed questions which provided a number of choices in the answers with respondents being able to select more than one answer, and two open questions requiring a written response.

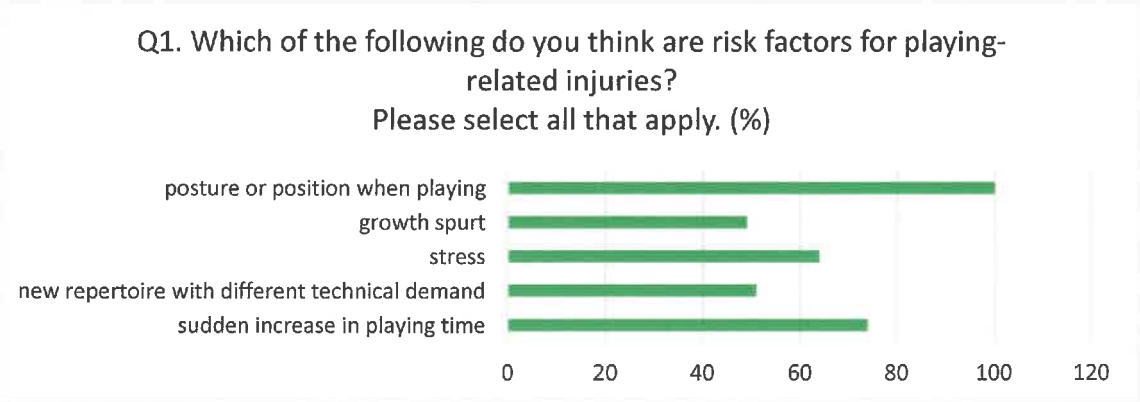
On December 11th 2015, the parents (a total of 172 families) were sent an email from the school, with an explanation about who I was and what I was doing, an invitation to participate, an assurance that the responses were voluntary and anonymous, and a link to the electronic survey. This prompted 44 responses over the first four days. A reminder was sent on December16th prompting another five responses over three days. A final reminder was sent at the very start of term on January 6th 2016. A total of 53 parents responded. This is a unit response rate of 30.8 per-cent. Reasons for the unit nonresponse rate of 69.2 per-cent need to be considered because of the influence of nonresponse on bias. Likely reasons for the nonresponses are:

- The school has an international student body and there are a number of families whose first language is not English. It may be that some parents did not feel skilled enough, or confident enough in use of English to read or complete the survey.
- It may have been that the survey was sent during the Christmas Holidays when families tend to be busy and answering the survey was not a priority.
- It is known that people with roles relevant to the survey topic are more likely than average to respond, and respondent interest in the topic increases response rate (Floyd and Fowler 2009) so it may be that the topic itself was not interesting to, or perceived to be relevant to, the parents who did not answer.

4.7.5 Parent Survey - Findings and Discussion

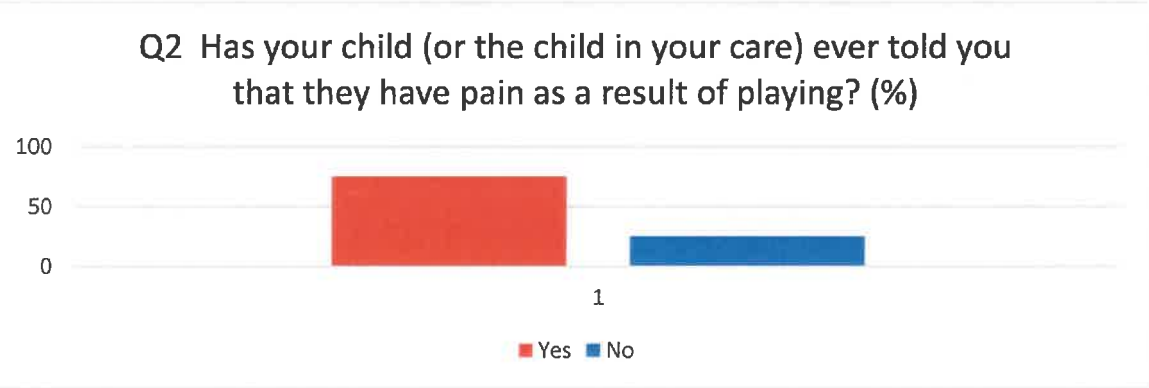
The survey software (SurveyMonkey) enabled basic graphical presentation of data for the question that had fixed category answers and the text-based answers were analysed by coding emerging thematic categories from the text. In the following sections, the responses to each of the five questions are presented and discussed.

4.7.5.1.1.1 Question 1: Knowledge of Risk Factors



100 per-cent of parents who responded knew that posture or position was a risk factor for playing-related injury, but the other four factors were not universally known to be risks factors. I found it somewhat alarming to have it confirmed that the parents who responded did not all know that there was a risk associated with the amount of time spent playing. It is an example of how (my) assumptions (as a physiotherapist) about what is 'obvious', or what is 'common knowledge' are incorrect, and insights such as these are part of the value of field-crossing during research. The implication of this finding is that there is a need to increase awareness of all of these risk factors for injury amongst the parents.

4.7.5.2 Question 2: Reported Incidence of Playing-related Pain



75 per-cent of parents reported that their child had, at some point, told them that they had pain as a result of playing. This reveals the extent of the problem at the school and the figure of 75% is closely aligned with findings in the literature about incidence in young players (Ranelli, et al 2008, Vinci et al 2015), Conservatoire students and professional orchestral musicians (Zaza, 1998, Blackie et al, 1999, Guptill, Zaza, & Paul, 2000, Kaneko

et al, 2005, Abreu-Ramos & Micheo, 2007, Zander et al 2010, Driscoll et al 2011, Ackermann et al, 2012, Ackermann et al 2013, Chan et al 2014, Chan & Ackermann 2014, Kenny & Ackermann 2015). That parents have not provided feedback to the school about such high levels of playing-related pain seems startling on initial reflection, but in a survey of parents at two schools in Sydney, one academically selective and one musically selective, Ackermann & Driscoll (2013) found that 50 per-cent of parents in the musically selective school thought pain associated with playing a musical instrument is normal, compared with none of parents in the academically selective school. It is likely that the parents at this school believe this level of playing related pain to be not only normal, but also acceptable. The implications of the findings from Question 2 are that the incidence rate is comparable to findings in the literature. That the parents have not drawn the schools' attention to this implies that the parents accept that this is normal. This almost certainly makes it more difficult to make a change: information about risk factors for injury can be provided to parents, but unless they perceive the issue of playing-related musculoskeletal disorders to be a problem that needs addressing, change is unlikely to occur.

However, these injuries are largely preventable, and I believe that the school has a moral and ethical duty to accept its duty of care to the pupils in relation to preventing playing-related injuries, and to try and change the perception amongst parents that (preventable) playing-related injuries is acceptable and inevitable.

The implication is that the school, as an institution, needs to send a consistent message that playing-related injuries are largely preventable, and that there are five major risk factors for school aged children which make these injuries preventable.

4.7.5.3 Question 3: What advice parents give

In addition to the answers shown above there were an additional seven responses who gave 'other' advice including recommending shiatsu massage, using hot and cold compresses, alternating ice with heat, or using a menthol rub.

It was reassuring that 35 out of the 50 respondents for this question, mentioned stopping / resting / taking a break / or practising less as advice that they would give, although it would have been even more reassuring if all of the respondents had given this answer.

The next highest response, with 14 responses, was to consult with the instrumental teacher. This indicates that parents have a high degree of confidence in the teacher, and this was reflected by findings from all of the focus group meetings, and in the literature (Guptill 2011, Norton et al 2015 & Norton 2016). As a clinical physiotherapist, I was particularly interested in this because instrumental teachers do not necessarily know about assessment of musculoskeletal injury and are not trained nor qualified to diagnosis or advise about treatment. It points again to the benefit of ensuring that instrument teachers deliver accurate injury prevention information and points to the need for them to be correctly informed.

The third highest response (11 responses) related to looking at the posture of the child. This again links closely with findings from the focus groups and Question 1 of the parent survey: pupils and parents all know that posture is a risk factor and so to seek a solution by addressing posture is not a surprise.

The fourth highest response (with eight responses) was to consult a physiotherapist. This was particularly interesting to me. As the school physiotherapist, providing a free and readily available service to the pupils, I had anticipated a higher response rate than this

The three respondents who reported that they would consult a medical doctor and the four who reported that they would seek other advice from another healthcare professional such as an osteopath, are similar to findings by Ranelli et al (2008) whose questionnaire revealed that four per-cent visited a health professional to seek advice for playing-related musculo-skeletal symptoms.

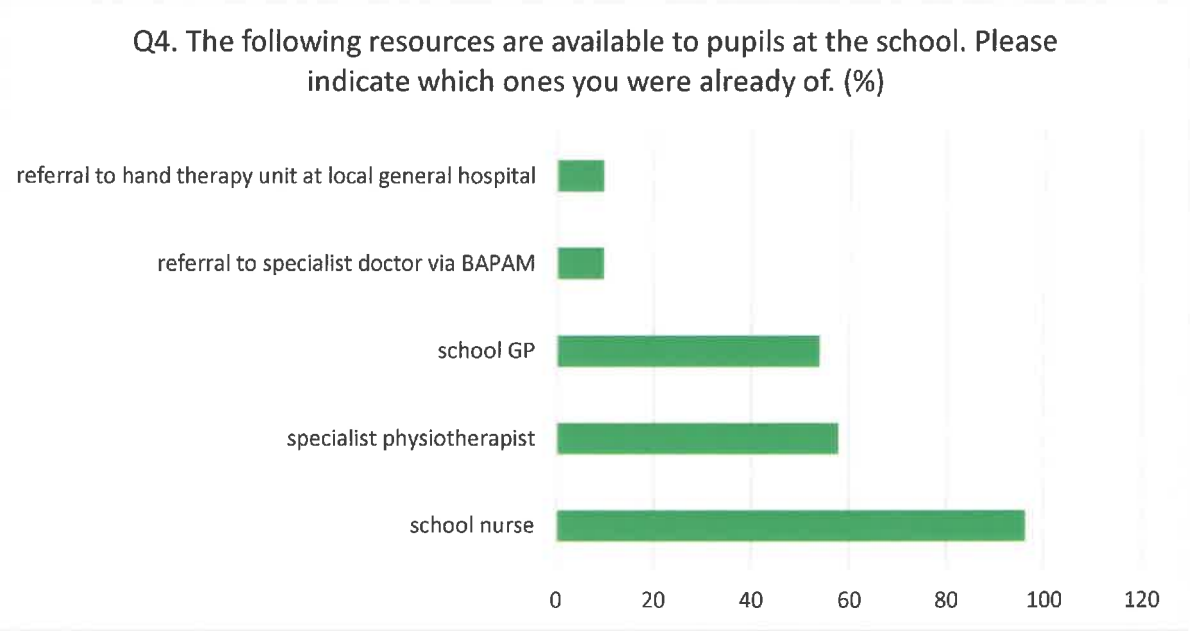
The responses to Question 3 highlighted the significance of the instrument teachers for the parents, as the person they would consult about playing-related pain. Norton et al (2015) have found that instrument teachers are well placed to be key members in a team approach to injury prevention, but implicit in this is that in order for this to be a useful strategy, instrument teachers must be providing accurate and appropriate advice and information. The instrument teachers were asked about their knowledge of risk factors for injury, and the results showed that they did not know about all the risks (4.7.9.1).

4.7.5.4 Question 4: Awareness of services available through the school

The school has a well-structured provision of care though the school medical centre (section 1.2.1). This is staffed by the school nurse, who works full time at the school in the school medical centre. She is supported in her care of the boarding pupils by the boarding house parents and staff. For help with playing related injuries, in addition to the school nurse, pupils have access to

- a local general practitioner via the school nurse.
- specialist performing arts medicine physiotherapist: I visit the school one day / week and pupils can be referred for a physiotherapy assessment or treatment appointment either though the school nurse, the boarding house staff or the instrument teachers.
- referral to specialist performing arts medicine physicians BAPAM
- referral to the specialist hand therapy unit at a local district general hospital.

Parents were asked which of these they knew about.

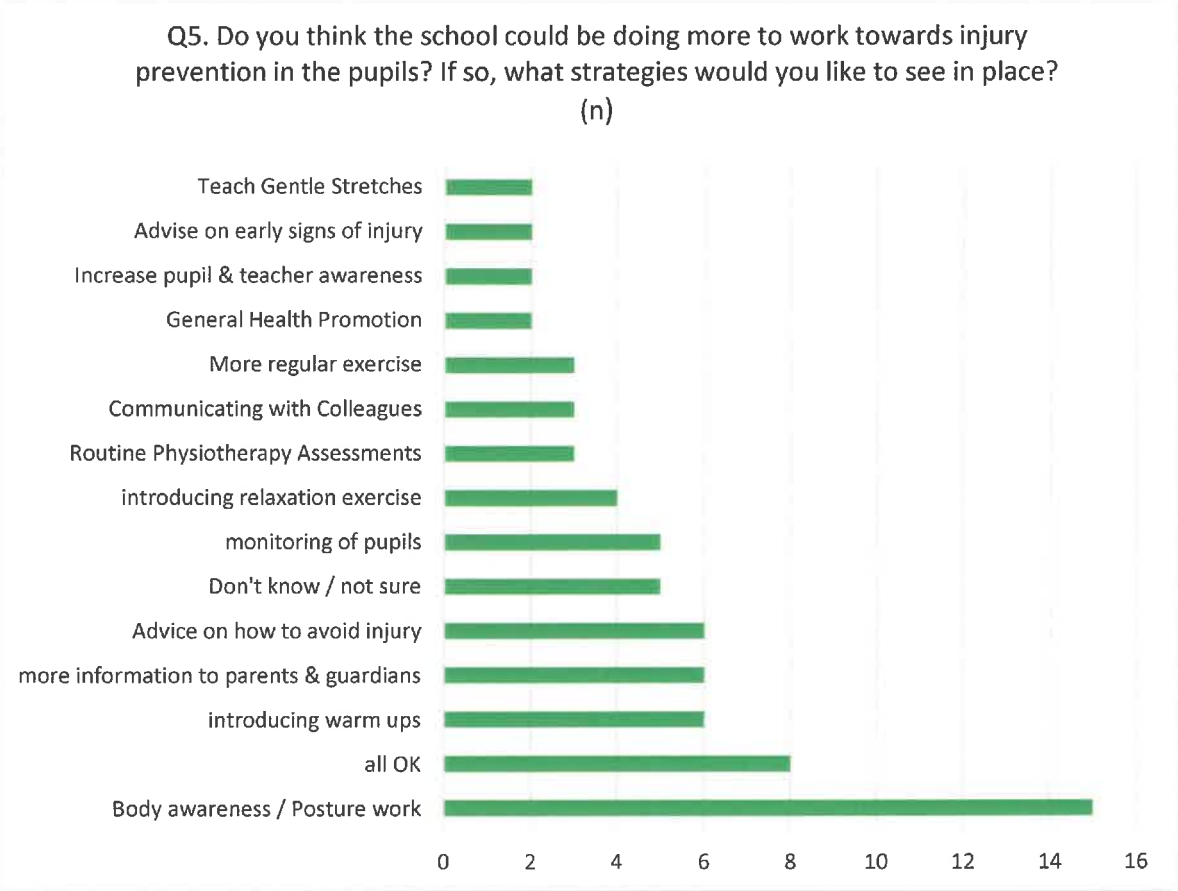


The responses to question 4 indicated that parents did not know what services to specifically help with playing-related injuries were available through the school. Of particular interest to me was that only 58 per-cent of respondents knew that I work at the school, despite being employed there for over seven years at the time of the survey, and despite the survey coming directly from me. This may also partly explain why, in Question 3, only eight parents responded that they would seek advice from a physiotherapist.

Access to the school GP was known about by 54 per-cent of respondents, despite all boarders being registered with the school GP, and the registration process requiring a signed form from a parent. The low awareness of access to specialist clinicians at BAPAM and hand therapists at the local general hospital is probably explained by the fact that very few pupils are referred to these services, and it is likely that only parents of pupils who have accessed these services would know about them. All of the responses indicate that information about the breadth of health care that is available at the school is not common knowledge. The major implications of this are that

- pupils may not be being directed to seek access to specialised expertise at the earliest opportunity and
- the school medical centre and its services (related to prevention and treatment of playing related injuries) need to have a higher profile within information sources at the school, such as the school website and the handbooks for pupils and for parents.

4.7.5.5 Question 5: What more could the school be doing?



The highest response (15 responses) suggested some sort of posture work. Suggestions included Pilates, Alexander Technique and yoga as well as general posture or body awareness work. This corresponds with the high response (100 per-cent) of parents knowing that posture is a risk factor for injury, and the number (n11) who would look at posture if their child reported playing related pain.

While the next highest response was that 'everything is OK', a number of parents also commented that the introduction of warm ups before playing could be useful, and that more information and advice for parents and guardians, about how to avoid injury, could be provided.

In addition to the responses shown in the table, there were a number of suggestions that arose only once:

- advice on taking breaks
- advise pupils what to do if they are injured
- advise pupils on help that is available

- teach this to the teachers
- meeting termly with instrument tutors
- stress reduction

Although each single one is not a significant contribution, collectively these ideas are useful. They all suggest that increased communication to pupils and instrument teachers about aspects injury prevention and health promotion is desirable.

4.7.6 Parent Survey – Key Findings

The key findings from the parent survey are:

- that parents did not know what the risk factors for playing-related injuries are,
- that parents reported a high incidence of playing related pain amongst their children,
- that parents referred to the instrument teacher for advice about playing-related pain
- that parents did not know what help was available within, or via the school, for playing-related pain/injury.

This strongly suggests that clear that the school needs to target information at the parents aimed at filling the gaps in this knowledge.

4.7.7 Instrument Teacher Survey - General Information

This short survey which was compiled and distributed using SurveyMonkey software. The survey comprised eight questions and was designed to find out what instrument teachers knew about and thought about playing-related injuries in young musicians.

4.7.8 Instrument Teacher Survey - Method

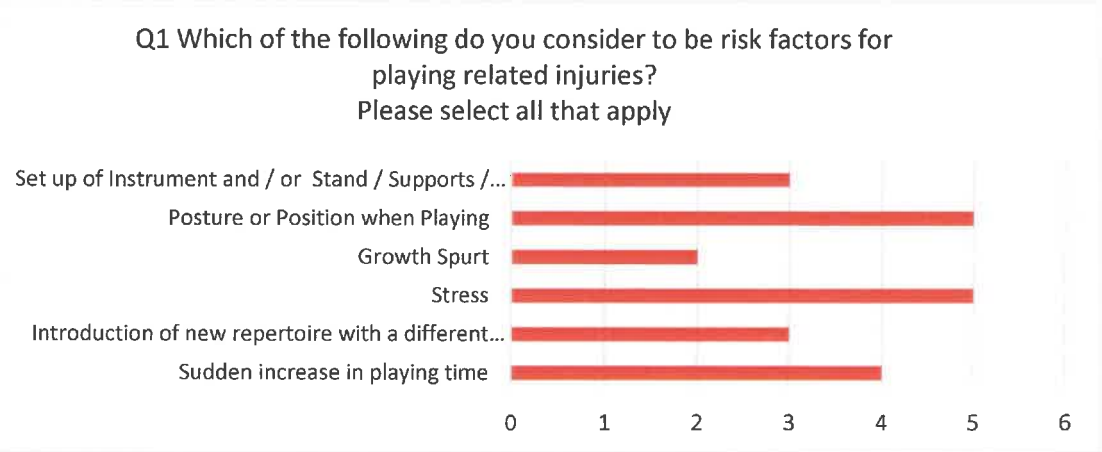
The survey used the five questions used in the Parent Survey, plus three additional questions, specific to the instrument teachers. After piloting it on two instrumental teachers and three staff members at the school, one question required minor amendment.

On December 14th all of the 60 instrument teachers were sent an email from the school email system, with an explanation about who I was and what I was doing, an invitation to participate, an assurance that the responses were voluntary and anonymous, and a link to the electronic survey. I was aware that it was the very start of the Christmas Holiday and that teachers may well not be looking at work related emails, so I was not concerned when the original response rate was low, with five responses on the first day. A reminder was sent on January 6th via email, stimulating one more respondent, and then a further reminder printed on brightly coloured paper, to attract their attention, was posted in each instrument teachers pigeon hole in the school staff room on January 20th. A total of six instrument teachers responded, giving a unit response rate of 10 per-cent. This is an extremely low response rate which t response rate itself deserves consideration. The Head of Strings thought it was probably because the instrumental teachers may well be bombarded with questionnaires and surveys and simply did not have time to complete it. I have considered whether it is symptomatic and reflective of the lack of concern placed on the issue of playing- related injuries. It is acknowledged that the responses can only be used as examples of what these six instrument teachers felt and are not necessarily representative of the larger group of instrument teachers. Nonetheless there are interesting features within their answers which are worthy of comment, reflection and discussion.

4.7.9 Instrument Teachers Survey: Findings and Discussion

The response rate from the instrument teachers was low, at ten per-cent (six respondents) which means that the answers cannot claim to be representative of the entire group of instrument teachers. However, the survey software (SurveyMonkey) enabled basic graphical presentation of data for the question that had fixed category answers. The text-based answers were analysed by coding emerging thematic categories from the text. The answers given provide give a glimpse into these instrument teachers knowledge of aspects playing-related injury. The instrument teachers who responded to this survey were a self-selecting group, who are interested in the broad topics of playing-related injury /risk /management / prevention in young musicians.

4.7.9.1 Question 1: Knowledge of Risk Factors



The factors provided in the question are all known risk factors for playing-related injury (Ackermann and Adams , 2004; Klicksteins, 2009; Driscoll, Ackermann and Kenny, 2011; Abreu-Ramos and Micheo, 2007; Rosset i Llobet and Odam, 2007), and emerged from the audit (4.4.1). The six instrument teachers who responded indicated that they did not know about all of these. This highlights the lack of knowledge of these risk factors amongst a key stakeholder group. The focus group meetings and the parent survey indicate that Pupils and parents seek advice from instrument teachers about what to do in the event of playing related pain and yet the response to this question from the small number of instrument teachers shows that they are not fully informed about the risk factors for injury in their pupils at the school where they work. The implications of this are that the information about risk factors needs to be targeted at the instrument teachers.

There were five additional comments (from six respondents) provided to this question, and these highlighted other contributory factors for injury not included in the original list. Two respondents made comments related to poor technique, one cited poor levels of general fitness, one mentioned playing for too long without taking a break, and one added that emotional / psychological states while playing can be a factor. These additional factors have all been noted in the literature (Ackermann & Adams, 2004; Klickstein, 2009; Driscoll et al, 2011) and are known additional risks.

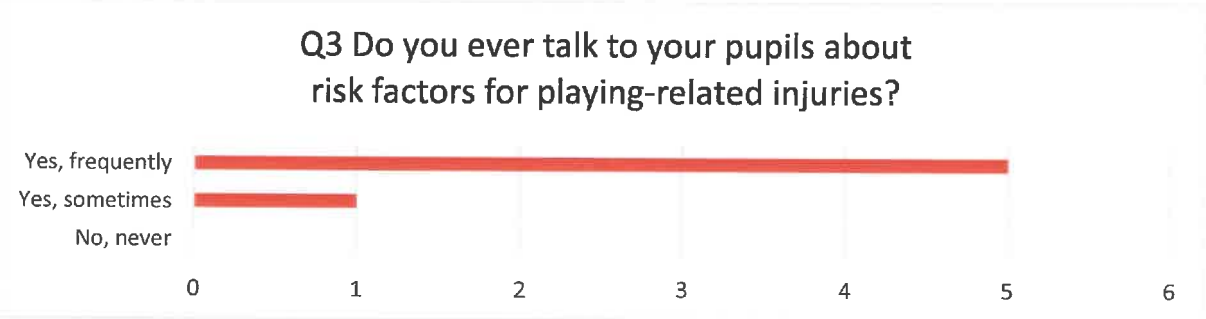
4.7.9.2 Question 2: Actively thinking about Risks for Playing-related Injuries in Pupils

All six respondents answered that they do 'frequently' actively think about risks for playing-related injuries in their pupils. This is a reassuring answer, in that it indicated that these teachers are actively thinking about risks. However, because of their incomplete lack of knowledge of what the risk factors are, their good intentions may be only partially effective. There were two additional comments provided by the respondents: One noted that she is particularly aware if the pupils are hypermobile, and commented that

"Teaching the best usage of muscles in the hands and arms is essential, as is awareness of the necessary relaxation, for pianists, especially in the wrists and fore-arms".

This is an interesting insight, again showing that the teacher is aware that hypermobility may present particular demands and challenges but she limited her consideration to (the rather obvious) use of the hands and wrists. In reality, hypermobility if it is present, typically affects many, many joints throughout the skeleton, including those of the elbows, shoulders and spine as well as those on the wrist and hand. This is an example of a 'half-measure' insight, where the instrument teacher has demonstrated some knowledge about hypermobility, but probably has limited knowledge, which limits the usefulness of the advice that she can give.

4.7.9.3 Question 3: Talking to Pupils about Risk Factors for Playing-related injuries



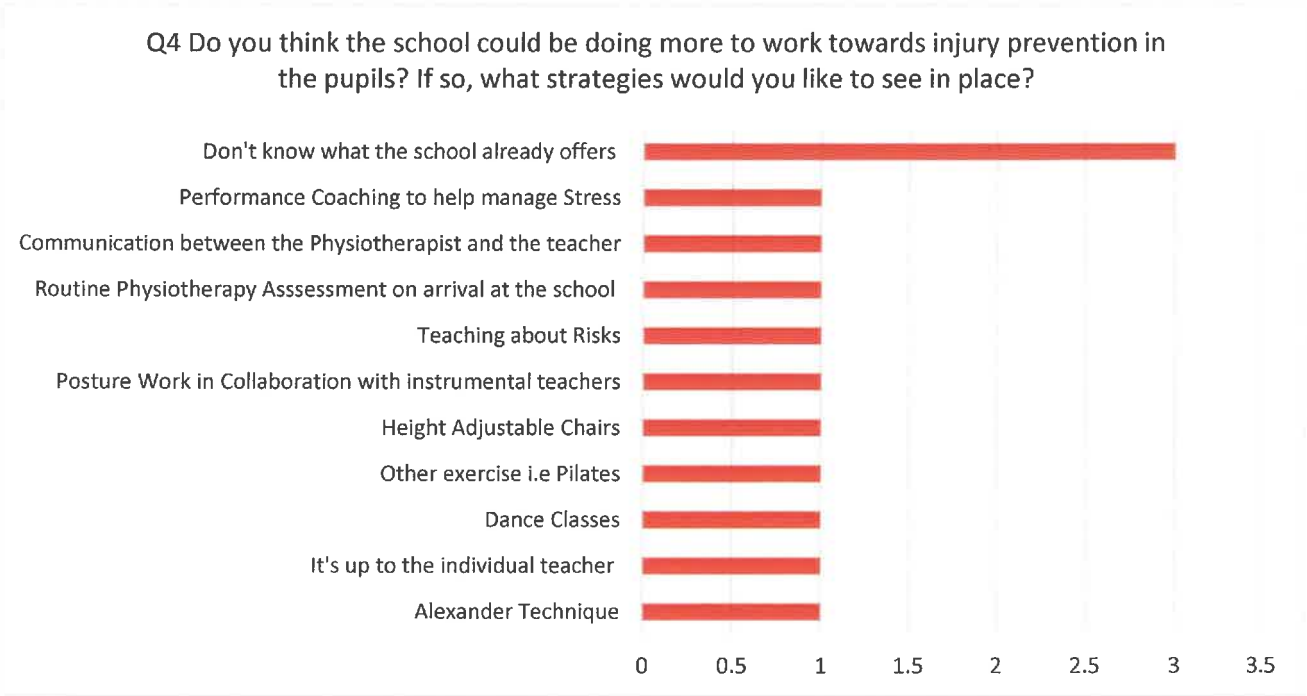
Again this answer, with five instrument teachers replying 'yes, frequently' and one replying 'yes, sometimes' initially seems reassuring and there were two additional comments provided which illustrate very sensible, useful advice and a practical, pragmatic approach:

> "We discuss posture, practice habits, '1 minute off in every 20', micro breaks during rehearsals and orchestral/chamber performances."

> "I tend to focus on awareness while playing rather than referring directly to possible injury."

However, from the answers provided to Question 1, we know that the instrument teachers are not fully informed about what the major risk factors for injury are. This raises concerns that it is likely that they are passing on mis-information or limited information to pupils. The implication is that, as instrument teachers are demonstrating a strong willingness to talk to pupils about risk factors for playing-related injuries, we need to ensure that they know the correct information.

4.7.9.4 Question 4: What more could the school be doing?



Three of the six instrument teachers who completed the survey responded that they do not know what the school is currently doing and so were unable to comment on what else the school could be doing. However, eleven different suggestions were made by five respondents, and this suggests that that this question prompted some thought and perhaps depth of feeling. The respondents had already indicated that they were engaged with the topic by answering the survey, and this engagement is demonstrated in the practical and thoughtful suggestions for additional activities that they provided:

- performance coaching to manage stress
- communication between the physiotherapist and the teacher
- routine physiotherapy assessment on arrival at the school
- teaching about risks
- posture work in collaboration with instrumental teachers
- height adjustable chairs
- other exercises i.e. Pilates
- dance classes
- it's up to the individual teacher
- Alexander Technique

There were some strong similarities to the suggestions made by the parents answering Parent Survey Question 5. There is a consistent opinion that more 'posture work' or 'body awareness work' such as Alexander Technique lessons and Pilate Classes would be beneficial. This corresponds to the 100% of parent responses and 5/6 instrument teacher responses who knew that posture was a risk factor for injury. The similarities between the parents answers and the instrument teachers answers is illustrated in Figure 4.4.

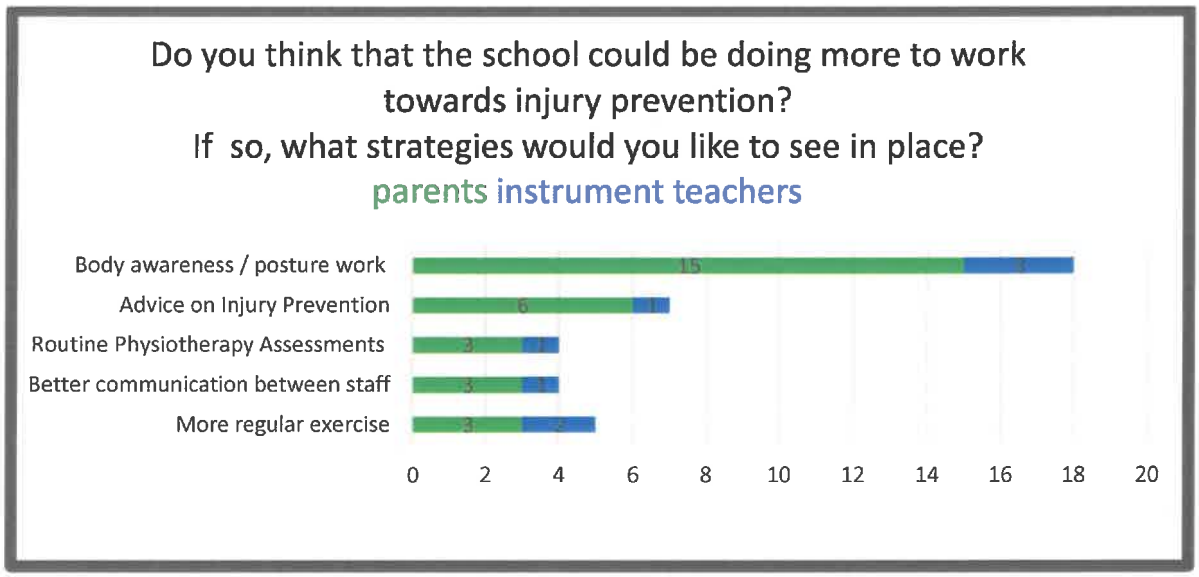


Figure 4.4 Showing that parents and instrument teachers would like more body awareness / posture work for the pupils.

4.7.9.5 Question 5: Incidence of injury that has affected playing

Four out of the six instrument teachers responded that they had not had an injury that had affected their playing. Although the sample size is too small to be of statistical significance, this is interesting in that it is significantly less than the common findings from the literature for professional orchestral instrumentalists musicians (Zaza, 1998: Blackie et al, 1999: C. Guptill, et al., 2000: Kaneko et al, 2005: Abreu-Ramos and Micheo, 2007:

Zander et al 2010: Driscoll et al 2011: Ackermann et al, 2012: Ackermann et al 2013: Chan et al 2014: Chan and Ackermann 2014: Kenny and Ackermann 2015: Zander et al., 2010b).

It is not possible to state why this figure is so low for this group, because in addition to being a very small sample size, there is not enough information about what else the instrument teachers do within their portfolio career. It may be that those that teach for a greater percentage of the time are less at risk that those who perform more. The research looking at incidence has been done almost entirely within the setting of conservatories, looking at full time performance students, or looking at professional orchestral players. There is no research that looks at incidence of injury specifically in instrument teachers.

4.7.9.6 Question 6: Incidence of Playing-related Injury in Pupils

Two thirds of the instrument teachers have had at least one pupil experience a playing-related injury that affected their ability to play. This aligns with all of research findings about incidence of playing-related injuries (2.2.2). I am intrigued by why the high incidence does not raise concern in teachers and parents enough for any of them to have flagged it up to the school. It is perhaps just reflective of the orthodoxy that pain is inevitable and normal.

4.7.9.7 Question 7: Advice given to Pupils

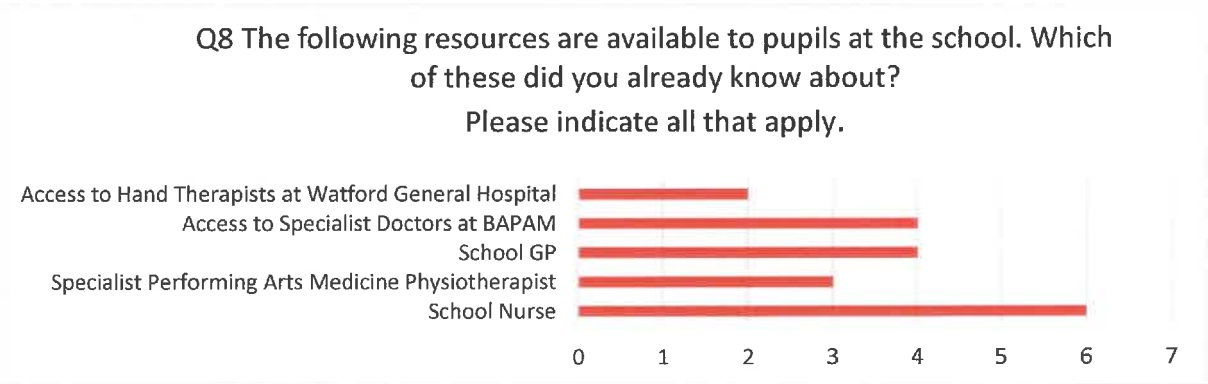
This was presented as an open question, providing a text box for responses. The responses were analysed and coded into the themes, which have been ranked by number of responses and shown in Table 4.5.

Table 4.5 The themes emerging from Question 7 of the Instrument Teachers Survey (2015): What advice would you give to a pupil who reported pain to you during a lesson?

Rank	Theme	Number of responses
1.	Try to work out the cause	IIIII III 8
2.	Refer to School nurse	III 3
	Refer to School physio	III 3
3.	To stop	II 2
	Review posture	II 2
	Advice about rest	II 2
	Gentle stretches	II 2
4	Refer to HOD to suggest lowering expectation	I 1
	Seek further help	I 1
	Exercise it away	I 1

All six of the respondents answered this question with a wide variety of suggestions and comments which were all helpful, sensible and useful. The comment about referring the matter to the relevant head of department to suggest lowering expectations, hints at a degree of tension between the teacher and the HoD.

4.7.9.8 Question 8: Awareness of services available through the school



All of the instrument teachers knew about the school nurse, but only half of them knew that there is a school physiotherapist, fewer than knew about access the school GP or to Specialist care via the British Association of Performing Arts Medicine (BAPAM). This flags up the issue of teachers being unable to direct their pupils to access appropriate help in a timely way. The implication is that the School Health Centre needs to push information about its services to the instrument teachers as well as to parents.

4.7.10 The Instrument Teachers Survey - Key Findings

The low response rate of the survey to the instrument teachers makes it impossible to assume that the answers are representative of the larger group of instrument teachers. However, the key findings are that these instrument teachers

- do not know what all the risk factors for playing-related injury are,
- state that they actively think about, and talk to pupils about, risks for playing-related injuries when working with the pupils, even though they do not know what the risk factors are,
- do not know what the school currently does about injury prevention, but had many ideas, for activities such as the introduction or expansion of 'body work' such as Yoga, Pilates, and Alexander Technique, and for strategies such as increasing communication between the physiotherapist and themselves,
- reported a high incidence of playing related pain in their pupils,
- indicated that they were responsive in seeking help if a pupil reported pain,
- and were not aware of services available within (or via) the school to help pupils with playing-related pain.

The answers provided demonstrate that communication to the instrument teacher about issues relating to playing related injuries can be, and indeed needs to be, significantly improved.

Although it is not possible to infer that the answers are representative of the larger group of instrument teachers, the trends demonstrated by the answers reinforce and support the information obtained by each of the other stakeholder groups: That knowledge of risk factors for playing-related injuries is low, and that incidence of playing-related injuries in pupils is high.

4.8 Statement of Key Findings from the First Cycle of Action Research

- That playing-related musculoskeletal symptoms are common amongst the pupils at the school (4.7.5.2, 4.7.9.6) and occur at a similar rate to that found in the literature relating to both children and adolescent musicians (Ranelli, et al 2008: Vinci, et al 2015), conservatoire students and professional orchestral musicians (Abreu-Ramos & Micheo, 2007; Ackermann et al, 2012; Blackie et al, 1999; Chan et al 2013; Driscoll

et al 2011; Guptill et al., 2000; Kaneko et al, 2005; Kenny & Ackermann 2015; Zander et al 2010; Zaza, 1998).

- That the five main risk factors for playing-related injuries are not universally known about by the key stakeholders (4.7.5.1, 4.7.9.1).
- That instrument teachers are the stakeholder group that are most influential on the pupils (4.6.1) and their parents (4.7.5.3).
- That the instrument teachers largely did not engage with the survey (4.7.7).
- That the instrument teachers are not providing consistent or accurate information to the pupils about injury risk and injury prevention (4.7.9.1, 4.7.9.7).
- That instrument teachers are ideally placed to be health promotion advocates (4.6.1) but need additional information in-order to do so effectively.
- That the parents (4.7.5) and pupils (4.6.1) are confident in seeking advice from the instrumental teachers who are not knowledgeable about the risk factors for injury (4.7.9.1), may not be knowledgeable about mechanisms of injury and are not qualified to assess nor advise on medical matters.
- That parents are not aware of what help is available through the school (4.7.5.4).
- That instrument teachers are not aware of what help is available through the school (4.7.9.8).

4.9 Summary, Reflections and Re-evaluation to conclude the First Cycle of Action Research

This section forms the all-important link between the first and second cycles of Action Research. The findings from the first cycle and the reflections on them, inform and steer the second cycle. As such this section could have been located either, here - as it is - at the end of the first cycle, or at the beginning of the second cycle. It has been located here deliberately because the reflection forms a conclusion to this cycle, and with the reflection came the re-evaluation of the project, with associated decisions about what was to come next.

After the fact-finding scoping work (4.1 pp81-111) which revealed five risk factors for playing related injuries at the school, the Research Questions were revisited and finalised to reflect this (4.2 p 112).

The first part of the 'action' component of the first cycle was initiated (4.4.1 p81), and between June 2013 and June 2015 three distinct health promotion activities were launched at the school:

- Use of a series of Health Promotion Posters displayed within the school
- Opening of a page on social media platform Facebook ('What's that, Henry?' fb page), to allow the posting of health promotion information through an alternative, user friendly platform
- 'Are You Sitting Comfortably?' workshops for pupils, aimed at teaching ergonomic ways of sitting to reduce muscular pain and fatigue during orchestral rehearsals and performances.

These activities had little impact, with poor awareness of the posters, poor attendance at the workshops, and low numbers following the Facebook page (4.4.1.4 pp111-112). The next 'action' component of the first cycle involved key stakeholders in either a focus group meeting or a survey, with the intention of finding out, broadly, what was known about and around risk factors for playing related musculoskeletal disorders, and to engage stakeholders in the design of a risk assessment tool.

The findings from the focus groups (4.6 pp126-151) and the surveys (pp162-170) were of enormous value, providing depth and breadth of information from key stakeholder groups. It is believed that this is the first time that attitudes towards, and knowledge about, risk factors for playing related musculoskeletal disorders in young instrumental musicians has been collected across key stakeholder groups within a specialist music school.

There was much corroboration of information, with strikingly similar answers emerging to certain questions across different key stakeholder groups. For example, parents and instrument teachers reported that their children/the pupils reported similar incidence of playing-related pain.

The instrument teachers were identified through the focus group meetings (4.6.1 pp131-136) and the parent survey (4.7.5.3 p157) as the most significant influence in the musical development of the pupils, and according to the parent survey, were often the 'go to' person for advice if the pupil reported playing-related pain (4.7.5.3 p157).

This contrasted starkly with the results from the survey to the instrument teachers at the school. They did not engage with the survey, indicating disinterest in or disengagement with

the topic, and those that did respond (ten per-cent) did not know the five risk factors for playing-related injuries (4.7.9.1 p163). It seemed that the parents had misplaced confidence in the instrument teachers ability to successfully and accurately advise on management of a playing-related injury,

The focus group meetings and the surveys revealed that there was widespread lack of knowledge across the stakeholder groups about all five risk factors for playing-related musculoskeletal disorders at the school. While a risk assessment tool could feasibly have been used to address this, ideas for more focused, targeted, helpful and practical suggestions for health promotion opportunities emerged from the focus group meetings and the surveys, particularly from the boarding house staff, with suggestions that injury prevention information could be provided via a number of mechanisms and opportunities:

- Within the pupil 'school planner': this is an A5 sized book provided to each pupil at the start of the academic year. It contains space for their timetable, as well as a diary for homework, it also has a section for important school information, policies, guidelines, phone numbers, etc. A section on risk factors for injury located within the school information in the planner would give a strong message that the school were entirely supportive of this initiative. The additional advantage would be that every single pupil would have access to the same information.
- Every year there is a 'new pupil induction day' for new (incoming) pupils and parents. They visit the school in June, prior to starting in September. They meet other pupils, are shown the boarding houses, fill in a variety of procedural registration forms and have a talk from the headmaster and the school bursar. The boarding house staff suggested to the senior management team that I be allowed to talk to new pupils and parents at this event.
- To new pupils during induction week at the start of the academic year: every year during the first week of the academic year, there is a period of pupil induction, when a variety of activities are provided for new pupils to assist them in settling into the routine of their new life boarding in a specialist music school.
- By using social media.

- To be actively involved in running health promotion activities within the Schools orchestral courses.

The focus group meetings and surveys also revealed that instrument teachers are highly influential on their pupils being identified as the 'first port of call' by parents (4.7.5.3) which locates the instrument teachers as ideal conduits of key information (Norton, 2016; Norton et al., 2015).

After several years of ineffective health promotion activities coming from the school medical centre (4.4.1 pp113-116), it became clear that it might be more effective to involve instrument teachers in directly delivering specific information about risk factors for injury to the pupils because they are the stakeholders with the greatest influence on the pupils (4.6.1 p131, 4.7.5.3 p157). However, it was clear that there were gaps in the instrument teachers knowledge about the risk factors (4.7.9.1 p163), and so equipping the instrument teachers with accurate information to give to the pupils would be key to the success of this initiative.

The mixed (and slightly overlapping) methods approach, using health promotion activities along with focus group meetings and surveys, help address the dependability of this research as per the trustworthiness framework (3.2.6 and Figure 3.1).

The key findings from the first cycle of Action Research (4.8 p170) and the reflectivity and reflexivity of the Action Research process (Denscombe, 2010; McKernon, 1996), enabled me to change direction for the second cycle of Action Research. This was supported by ongoing discussions with colleagues at the school, from the field of physiotherapy in other elite performance settings and from the field of performing arts medicine.

I decided that the idea of developing a playing-related injury-prevention risk assessment tool (4.4.2 p116) be abandoned, and that the second cycle of Action Research should focus on two main areas:

1. Broaden health promotion activity using the suggestions that emerged from the staff focus group meetings
2. Strategically involve the instrument teachers to convey key information to pupils, and to try and increase their engagement with this topic.

Chapter Five - Second Cycle of Action Research

5.1 Identification and Analysis of Problem

In Chapter Five I will give the rationale behind the strategy for the second cycle of Action Research, explain the conception of two radical ideas which emerged as a direct result of two 'lightbulb moments', and the subsequent development of these ideas into key strategies. I will then discuss the implementation of these strategies.

In this section I will explore some of the reasons why health promotion initiatives at the school had been unsuccessful, before looking at successful strategies from the world of dance education which has been selected because it also is involved in the development of young performers, who use their body to extreme degrees, and who face the risk of performance-related injury. I will then introduce two radical ideas which emerged as a direct result of two lightbulb moments. These changed the direction of the second cycle of Action Research and influenced the project in profound ways.

5.1.1 What hasn't worked

Multiple health promotion initiatives between October 2008 and June 2015 (4.4.1, 5.1.1), including designing and displaying health promotion posters aimed specifically at the pupils (see Appendix F), a 'Facebook' page aimed to interest young musicians by posting items of interest about musicians' health and wellbeing and about playing-related injury prevention, and optional talks about posture had made no impact on the number of injuries requiring physiotherapy. The focus group meetings and the surveys, carried out between October 2015 and January 2016 as part of the first cycle of Action Research, revealed that there was still widespread lack of accurate knowledge amongst key stakeholders, about what the risk factors for playing-related injury are (4.7.5, 4.7.9). With a low response rate to the Parents Survey (4.7.3) and an extremely low response rate to the Instrument Teachers Survey 4.7.7) there also appeared to be an apparent lack of engagement with issues relating to injury prevention for musicians. This mirrors findings about professional orchestral players (Rickert, et al., 2014) and from conservatoires about attitudes towards caring for physical health amongst undergraduate students (Kreutz et al., 2009; Park et al., 2007; Spahn et al., 2002)

5.1.2 What to try next

The focus group meetings and the parents survey revealed that pupils and their parents pay the highest regard to advice from their instrumental teachers (4.6.1, 4.7.5.3) and this may explain why health promotion material coming from the school medical centre was not paid attention to: it was simply emanating from a source that the pupils are not tuned in to. The significance of the relationship between the pupil and the instrument teacher has been reported in the literature (Gaunt, 2010), and researchers have long argued that health promotion should be included in musical education from the very first lessons (Blackie et al., 1999; Chesky et al., 2006; Spaulding,1988). The benefit of establishing from the very earliest instrument lessons habits that can help musicians throughout their careers is highly desirable. This, along with findings from the focus group meetings and the surveys point to the potential advantage and benefit of having the instrumental teachers involved in any injury prevention / risk awareness / health promotion initiative at the school and this stance is supported by the literature (Guptill, 2011; Norton et al., 2015; Zaza, 1993).

It was clear that 'whatever it was' that was to be implemented next, the instrument teachers should be involved in its delivery to the pupils (5.6) although at this point it was not entirely clear to me what the next step would be. Seeking clarification, in December 2015 and January 2016 I began looking at injury prevention and health promotion strategies that other comparable organisations have in place. The injury prevention strategies in dance education are explored in section 5.1.3.

5.1.3. Successful strategies in other settings

In order to find out if comparable organisations in different genres of performing art had successful injury prevention strategies in place, in November and December 2015, I contacted physiotherapists from specialist dance schools who, in common with the school in this study, receive UK Government funding under the MDS.

There are many similarities between the composition and constitution of the specialist dance schools and the school in this study: they are boarding schools, with pupils aged between 8 and 19 years of age, who are admitted to the school after a stringent audition process. The school timetables incorporate many hours of dance classes - rather than instrument practise - embedded within the timetable amongst academic lessons.

Between them the specialist dance schools have a number of health promotion and injury prevention strategies and practices in place that the music schools do not have. The

initial observation is that the dance schools have a higher input from physiotherapy. All of them have at least one full time (or equivalent) specialist physiotherapist. In each school the physiotherapist is involved with the pupils at the earliest opportunity: at the point of audition.

Part of the physiotherapists role during the audition process is to screen applicants for certain attributes that are known to be limiting factors for progression in dance, for example restricted mobility in the hips of ballet dancers. All pupils are then assessed and screened by the physiotherapists when they start at the school. Then there is routine annual input from the physiotherapists: for example, one of the schools holds an annual foot clinic, and a compulsory annual injury prevention talk is provided for new and existing students each September. This covers information about management of injuries and also nutrition. The physiotherapists, without exception all described what they perceived to be a good and close working relationship between themselves and the dance staff: weekly meetings between dance staff and physiotherapists take place to discuss individual cases and trends. The physiotherapists had a mechanism for flagging up injured pupils to the dance staff, by means of a 'pink card' system, in which pink cards are issued to injured pupils with details of what they can and cannot do in dance lessons.

Aside from significant levels of input from physiotherapy, the schools include a significant amount of strength and conditioning training for all their pupils. There are strength and conditioning classes, and also Pilates classes. At each school these are compulsory and embedded within the timetable rather than being additional or optional classes.

Each school has a GP who visits the school regularly and in one school, an orthopaedic physician with a specialist interest in dance medicine attends the school once every three weeks. Many pupils are covered by private health insurance either through their parents or via the BUPA schools insurance scheme. This enables rapid access to assessment and treatment from clinicians who have relevant expertise and interest in management of dance injuries.

In summary, a mind-set towards injury prevention in the world of dance and dance education is more prevalent and more developed than in the world of instrumental playing and teaching. The dance schools have open channels of communication between the physiotherapists and the dance teachers and have made aspects of health and wellbeing a priority, such as compulsory Pilates and strength and conditioning classes, to the extent that they are incorporated into the timetable on a daily basis.

Physiotherapy and other healthcare is readily and rapidly available, providing timely access to expert help with injury assessment, diagnosis, management and treatment.

The strategies found within the dance schools closely mimics aspects of the healthier dancer programme developed by Dance UK. Dance UK was founded in 1982 by a group of dance professionals who identified the need for a central organisation which could tackle the big issues facing the dance sector as a whole. It aims to promote sustainable, longer dance careers and to improve the conditions in which dance is created, performed and experienced.

In January 2016, as part of my wider reading about injury prevention in comparable arenas of elite sports and dance performance, I found, on the Dance UK website, a set of industry standards for dancer's health, wellbeing and performance. A full copy of these industry standards for can be found in Appendix K. The full document is

> "an attempt to provide, in one simple document, clear guidelines on the standards of practice the dance industry is striving for in this area that can be used as an advocacy tool and checklist"
>
> (One Dance UK, 2016).

In April 2016, Dance UK, merged with the association of dance of the African diaspora, the national dance teachers association, and youth dance England, and is now known as One Dance UK. It advertises itself as the national body for dance in the UK.

One Dance UK advocates and lobbies government and the cultural industries to promote the importance of dance and the needs of dancers. It aims to works towards creating a diverse, dynamic and healthy future for dance. The healthier dancer programme seeks to improve the physical and psychological health of dancers through a variety of measures which include:

> "**Advice and information** on health, fitness and injury prevention for recreational dancers, and for those in vocational training and working professionally.
>
> **Healthier dancer events** for dance professionals, dance medicine and healthcare practitioners and scientists: promoting in-depth, shared understanding of healthier dance practice.
>
> **The healthcare practitioners directory**, a UK wide database of medical practitioners and complementary therapists with experience of working with dancers.

Facilitating research into dancers' health, injury and performance.

Working with experts in medicine, science, health and dance to improve and develop our understanding of healthy dance practice and set standards for the dance sector.

Advocating for improved healthcare and dance science provision for dancers".

(Dance UK, 2015)

Dance UK has also been instrumental in developing a document entitled 'Industry standards for dancers' health, well-being and performance'. These provide clear guidelines that can be used as an advocacy tool and also as a checklist, on the standards of practice the dance industry is striving for. The guidelines are extensive, and for the purposes of this study, I have selected those that both apply to dance education and can be readily compared with provision for instrumental music students. This is illustrated in Table 5.1.

Table 5.1 A Selection of Dance UK Industry Standards for Dance Students compared with provision for Instrumental Music Students.

All dancers have a right to:	Instrumental Musicians
Be taught safely and effectively by an appropriately qualified and experienced teacher.	Instrumental teachers are not required to have any qualification
Education in and access to up-to-date information on healthy dance practice, injury prevention and dance science.	There is no requirement to include this
Access to affordable and fit for purpose medical healthcare and dance science services.	There is no requirement to provide this
Safe and appropriate spaces to work in.	Nominally covered by Health & Safety at Work Legislation, but many orchestral or pit instrumental musicians find themselves playing in excessively cramped conditions due to constraints on the spaces
A working environment that allows for adequate rest, nutrition, hydration.	See MU guidelines
A working environment that is conducive to psychological as well as physical health in order to meet the performance demands of the dancer-athlete.	See MU guidelines
Dance education and training for young people and the general public will include:	Instrumental education and training for young people and the general public
A basic introduction to warming up and cooling down, nutrition and applied anatomy (including the growth spurt), demonstrated through the teaching.	This is not routinely included
Clarity from the teacher for students and parents on why these are important and how they apply to healthy dance practice.	This is not routinely included
Signposts to further information for students and parents.	Not applicable
For vocational dance students will include: The above and...	For vocational instrumental students

Table 5.1 - CONTINUED	
Education in how the interrelated areas of anatomy, physiology, biomechanics, psychology and nutrition apply to dance practice and performance	This is not routinely included
Essential information on injury prevention and management.	This is not consistently included
Essential information on the growth spurt	This is not routinely included
Dance spaces – what the requirements for safe and optimal dance practice are and how to mitigate risk in circumstances that aren't ideal.	See MU info
For dance teachers will include: The above and	**For instrumental teachers will include:**
The application of the above in and through the teaching of dance.	
Basic first aid and the contents of a dancer's first aid box.	Not routinely taught
Continuing Professional Development (CPD) on the above subjects to be undertaken at least biennially.	Not required
Being a member of an appropriate network/organisation that will ensure access to up-to-date information and news of developments in the field.	Not required
Dance medicine and science support: For all dancers will include	**Performing Arts Medicine and science support: For all instrumental players**
Use of the NHS: dancers educating the health practitioners seen about the specific needs of dancers (Dance UK and its partners will lobby for more 'Sports and Exercise Medicine' specialists and to have dance as a speciality within that).	Does not happen
Dance UK's Practitioners Register: ensuring dancers know about the register and can access it to find dance knowledgeable medical practitioners when they need them.	BAPAM register of Practitioners.
Dance specific musculoskeletal assessments for individuals to understand their own anatomical limitations in order to work with them.	Not routine practice
Monitoring of growth for young people to adapt training accordingly during growth spurts.	Does not happen
Health questionnaire to be completed by individuals to flag up any potential problems to be aware of during dance training.	Does not happen
Access to suitable first aid, especially ice.	
For dancers on intensive training programmes:	**For instrumental musicians on intensive training programmes:**
Regular assessments – musculoskeletal, health, fitness, anthropometry – to monitor for improvements/problem areas, helping to assess effectiveness of the training for that individual.	Does not happen
Supplementary training provided as needed and recommended for individuals following individual assessments.	Does not happen
Access to (at minimum) a dance knowledgeable physiotherapist, nutritionist and counsellor as well as registration with a local GP.	Probably happens
Longitudinal monitoring of injury for analysis in order to spot trends, mitigate identified causes of injury and inform resource provision and training.	Does not happen
Access to an appropriate medical insurance scheme.	Does not happen

The spirit and intention of a number of the standards published on the website, struck me as absolutely applicable to musicians and these are shown in Table 5.2. The full list of

Dance Industry Standards for dancers health, wellbeing and performance is shown in Appendix K.

Table 5.2 A Selection of One Dance UK Industry Standards which are equally applicable to Instrumental Musicians.

The dance profession aspires to:

- Healthy and effective dance training/teaching.
- Fit, healthy, confident, accomplished dancers providing positive role-models for future generations.

All dancers have a right to:

- Be taught safely and effectively by an appropriately qualified and experienced teacher.
- Education in and access to up-to-date information on healthy dance practice, injury prevention and dance science.
- Access to affordable and fit for purpose medical healthcare and dance science services.
- Safe and appropriate spaces to work in.
- A working environment that allows for adequate rest, nutrition, hydration.
- A working environment that is conducive to psychological as well as physical health in order to meet the performance demands of the dancer-athlete.

Dance education and training:

- **For young people and the general public will include:** a basic introduction to warming up and cooling down, nutrition and applied anatomy (including the growth spurt), demonstrated through the teaching.
- Clarity from the teacher for students and parents on why these are important and how they apply to healthy dance practice.
- Signposts to further information for students and parents.

For vocational dance students will include the above and…

- Education in how the interrelated areas of anatomy, physiology, biomechanics, psychology and nutrition apply to dance practice and performance.
- Essential information on injury prevention and management.
- Essential information on the growth spurt.
- Dance spaces – what the requirements for safe and optimal dance practice are and how to mitigate risk in circumstances that aren't ideal.

For dance teachers, professional dancers, choreographers, directors and dance managers: will include:

- Will keep themselves regularly updated on the latest best practice for dancers' health, wellbeing and performance appropriate to their position.

No comprehensive strategy for addressing the issue of playing-related musculoskeletal disorders emerged from the other specialist music schools and having looked at the information from the specialist dance schools and One Dance UK, their strategies are

far more comprehensive than anything in place to look after instrumental music students, and they serve as a stark reminder of how far behind dance education, the education of instrumental musicians is, in terms of caring for their health and wellbeing, and is a prompt that there is much work to be done in this field.

Acknowledging the restrictions of the amount I could do within the time frame and resources of an EdD I strategically decided to employ two ideas that emerged as a result of two critical incidents during the Autumn of 2015 and Winter of 2015/2016. In the next sections I will describe these two critical incidents and introduce two unique and innovative ideas that emerged from these two critical incidents. I will detail how they influenced, steered and directed the second cycle of Action Research.

5.1.4 The first 'Lightbulb Moment'

This was a part-time EdD and I was also working four days/week, but as part of the process of reflection that forms an intrinsic part of the Action Research strategy (and also the process of being an EdD student), I became completely immersed in and absorbed with my research and found that it consumed my thinking much of the time. I am certain that the immersion of thought and absorption in the process positively enabled me to take notice of, and attend to, two incidents that became critical to my thinking and to the direction and development of this project. In the next section I will identify the first of these two critical incidents and explain how it led to an innovative idea, through which I developed a mechanism which would make visiting instrument teachers at the school central to the delivery of health promotion/injury prevention information, as recommended in the key findings from the first cycle of Action Research (4.8), and supported by the literature (Norton, 2016; Zaza, 1993).

As an assessing clinicians for BAPAM. I am required to attend their training days. These are held twice each year and are useful not only because they fulfil BAPAMs own requirement for CPD through a structured series of talks, but because they also provide valuable and regular opportunities for networking and spending time with like-minded colleagues.

In November 2015, while in the midst of data collection via the focus group meetings, I was becoming increasingly aware of the profound influence of the instrument teachers and realising that they needed to be key figures in the second cycle of Action Research. During

this time, I attended a BAPAM training day. Immediately after the lunch break, the Chief Executive Officer of BAPAM was talking to the delegates before introducing the speakers for the afternoon session. She commented that she believed that we should be talking more to instrumental teachers about injury prevention, which completely resonated with my reading, my findings and my thinking, and she then suggested that perhaps we should talk to the exam boards responsible for graded practical instrument examinations. I spent the journey home pondering the idea that including something about risk for injury or injury prevention, within the instrument assessment process, might be a mechanism to ensure that this topic becomes part of the common discourse.

I began developing the idea of including an element of health promotion or injury prevention within the (already established) instrument assessment process at the school. This germinal idea developed into a strategy that involved the instrument teachers in the delivery of key information and was used in the second cycle of Action Research.

Information about assessment is given in section 5.2.1 and details of how it was used in the second cycle of Action Research can be found in section 5.3.1, and 5.4.1.

5.1.5 The second 'Lightbulb Moment'

Having discovered the depth and breadth of information on the 'Healthier dancer programme' page of the Dance UK website, in January 2016 I phoned the Musicians Union (MU), believing it to be an organisation with broadly similar objectives to Dance UK. After a brief introduction about who I was and what I was doing, I enquired whether they had comparable information about industry standards for working conditions, teaching expectations and health advice for their members. The initial answer was about hearing protection for musicians, for which the MU is a strong advocate, but that was all. However, within two days of my initial contact with the MU, I received a phone call from the MU national organiser for education and training. She was extremely interested in my work at the school, and our conversation led to me talking about my findings, including my findings about the instrument teachers. She explained that the MU was in the process of revisiting its safeguarding training. During this conversation, the second critical incident occurred, as I realised that the prevention of playing-related injuries in young musicians at the school, could be, and indeed should be considered as a safeguarding issue, and playing-related injury prevention should be housed under the framework of safeguarding in schools.

following section I am going to briefly explore literatures on the use of assessment in developing positive motivation for learning, and the role that assessment can play in that. Assessment is known to be one of the key factors that affects motivation for learning (Wynne Harlen in Gardner, 2012), to the extent that Stiggins (2001) claims that

> "teachers can enhance or destroy students' desires to learn more quickly and more permanently through their use of assessment than through any other tools at their disposal''
>
> (Stiggins, 2001, p.36).

This informs us that assessment can be an extremely positive or an extremely negative process for learners. In order to ensure that this process does not result in a counterproductive outcome, in the next section will look at how assessment can be used to positively influence motivation for learning.

Assessment processes usually fall within one of two categories, known as summative assessment or formative assessment. In the next section I will explain the difference between the two.

5.2.1.1 Assessment for Learning

The term 'assessment for learning' has become popular in recent years, and is fundamentally different from summative or formative assessment. It has been defined as

> "the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there"
>
> (Assessment Reform Group, 2002).

One of the key characteristics and central processes in assessment for learning is the provision and supply of feedback to the learner (Swaffield, 2008).

Below are listed ten principles which underpin assessment for learning.

Assessment for learning

- is part of effective planning
- focuses on how pupils learn
- is central to classroom practice
- is a key professional skill
- is sensitive and constructive
- fosters motivation
- promotes understanding of goals and criteria
- helps learners know how to improve

- develops the capacity for self (and peer) assessment
- recognises all educational achievement

(Assessment Reform Group, 2002)

Using assessment to increase pupil knowledge about risk factors for injury should ideally contain at least some elements of 'assessment for learning'. How it could be included within part of an assessment process is outlined in section 5.2.1.2 and detailed in section 5.3.1.

5.2.1.2 Instrument Assessment at the School

Pupils at the school are routinely assessed twice each year on their first study instrument and once each year on their second study instrument. The purpose of the assessment is to monitor pupil progress with their instrumental playing. Additionally, pupils in year nine and in year 11 are re-auditioned for a place in either year ten, to enable them to begin GCSE courses, or year 12, to enable them to enter the six form and begin courses leading to 'A' level qualifications.

The assessments are conducted in a formal setting with each pupil playing for the relevant head of department (strings, woodwind, brass and percussion or keyboard). They are required to play a prepared piece, or a study, or scales. The subjective summative assessment process is well established at the school, and are part of a process with which the pupils fully engage as it has high stakes: failing an assessment can lead to losing your place at the school.

The idea of inserting one question about risk factors for injury into this well-established assessment process seemed like a great opportunity and did not seem logistically impossible

Ideally the assessment process should contain elements of assessment for learning, but the current instrument assessment process was well established, and I took a pragmatic view to go with what was there, rather than to try and alter it. Details of how this initiative was introduced are found in section 5.4.1.

5.2.2 Child Protection, Duty of Care and Safeguarding

The words child protection, duty of care and safeguarding are widely talked about in education, healthcare and charity sectors. In this section I am going to define these terms and provide an explanation of the differences between them. I am then going to talk about the historical relevance of safeguarding within specialist music schools, against a background of

historical allegations of sexual abuse, before introducing legislation, guidelines and policies that are currently in place.

Safeguarding is frequently discussed in the same context as child protection, and the two terms are often and incorrectly used synonymously: there is no legal definition of child protection, but child protection measures aim to keep children safe where there is serious risk of harm which may arise from a single event or from a series of concerns over time. Child protection refers distinctly to children who are at risk of harm, whilst safeguarding refers to all children.

Safeguarding is defined in the UK governments 'working together to safeguard children' (2013) document as:

- Protecting children for maltreatment
- Preventing impairment of children's health and development
- Ensuring that children grow up in circumstances consistent with the provision of safe and effective care and
- Taking action to enable all children to have the best outcomes

('Working Together to Safeguard Children', 2013).

Within school settings safeguarding relates to the action taken to promote the welfare of children and to protect them from harm.

Duty of care sits within the legal framework of English common law. It is defined by my professional body as a legal duty to provide a reasonable standard of care to your patients and to act in ways that protect their safety (Chartered Society of Physiotherapy, 2013).

Within schools, safeguarding is the set of actions, behaviours and policies that are formally in place to protect pupils from abuse and maltreatment. Safeguarding is generally considered to be of most relevance to protecting children from sexual abuse. Within the context of instrumental tuition in general, and specialist music schools in particular, it is broadly acknowledged that the predominant pedagogy of one to one tuition, and the intense relationship that can develop between pupil and teacher can foster in some cases, high levels of dependency, placing pupils in an extremely vulnerable situation, with the teacher being in a position of extreme power. The specialist music schools in the UK have a sad and unfortunate history of allegations and incidents of sexual abuse (5.2.2.2) and in light of this, the issue of safeguarding within the cluster of specialist music schools, is a politically hot and particularly sensitive topic.

However, in a broader sense, safeguarding is about protecting children from any harm, and as a majority of playing-related injuries are preventable, measures to protect children from preventable injuries are unarguably a safeguarding issue.

The national schools inspectorate in the UK, OFSTED, has published 'Safeguarding in schools: best practice' (2011) which defines and summarises Safeguarding as shown in Text Box 25.

Safeguarding: a definition

- protecting children and learners from maltreatment
- preventing impairment of children's and learners' health or development
- ensuring that children and learners are growing up in circumstances consistent with the provision of safe and effective care
- undertaking that role so as to enable those children and learners to have optimum life chances and to enter adulthood successfully.

Text Box 25 OFSTED Definition of Safeguarding (2011)

Ofsted has adopted this definition of safeguarding because it is used in both the Children Act (2004) and in the Department of Education guidance document 'Working together to safeguard children', originally written in 2010 and updated in 2015, which focuses on safeguarding and promoting children's and learners' welfare.

The second bullet point 'preventing impairment of children's and learners' health or development' seems particularly pertinent to the issue of attempting to prevent injuries in young musicians.

With this as a policy framework, I decided that I would try and include 'injury prevention' under the safeguarding umbrella at the school.

In the next sections I will look at background information about safeguarding in more depth, before concluding that injury prevention and safeguarding are not separate issues.

5.2.2.1 Safeguarding Children: legislation, guidelines and policies

Within Education in the UK, there is a raft of statutory guidelines designed to ensure children are protected by adequate safeguarding measures within schools. A timeline illustrating when major safeguarding and child protection legislation was introduced in England is shown in Figure 5.1.

1870 Compulsory School attendance for Children Aged 5 – 12

1875

1880

1885 The age of Consent changed from 12 to 16.

1889 **The Prevention of Cruelty to and Protection of Children Act or 'Children's Charter'**

1894 **The Prevention of Cruelty to Children Act 1900**

1904 **The Prevention of Cruelty to Children Act** was amended again to give the NSPCC a statutory right to intervene in child protection cases and the power to remove children from abusive or neglectful homes.

1908 **The Children's Act** Juvenile courts introduced. Sexual abuse by a family member became a legal rather than church matter.

1915

1920

1930

1932 **Children and Young People Act** introduced Supervision orders for 'at risk' children

1933 **The Children and Young People Act was amended** to combine all child protection law into a single piece of legislation.
It raised the age of criminal responsibility to 8 ,abolished hanging for any one aged under 18, & raised the school leaving age to 14.

1945

1948 **The Children Act** abolished the ad hoc arrangements for looked after children that had existed since the Poor Law was introduced in 1601. Local authorities were required to establish a Children's Committee and appoint a Children's Officer

1950

1960

1970 **The Local Authority Social Services Act** consolidated local authorities' social work services and social care provisions into social services departments.

1974 Area Child Protection Committees (ACPCs) developed in England and Wales following the killing of Maria Colwell by her stepfather. These committees were designed to coordinate efforts locally to safeguard children at risk.

1980

1989 ***Children Act*** gave children the right to protection from abuse and exploitation. It also introduced the concept of parental responsibility and enshrined in law the right to inquiries to safeguard their welfare.

1995

1999 ***The Protection of Children*** **Act** aimed to stop paedophiles from gaining employment which gave them access to children. Organisations that work with children are required to tell the Department of Health about anyone suspected of putting children at risk or harming them.

2004 ***Children's Act***: Safeguarding Children Boards replaced ACPCs.
& the Bichard Inquiry into the Soham murders recommended a registration scheme for those working with children and vulnerable adults. This resulted in the Independent Safeguarding Authority, responsible for the Vetting and Barring Scheme. (The ISA has since merged with the Criminal Records Bureau to form a new body, the Disclosure & Barring Service).

2010 ***Working Together to Safeguard Children*** (statutory guidance) was released.
It outlined the ways in which organisations and individuals should work together to safeguard and promote the welfare of children and young people in accordance with the Children Act 1989 and the Children Act 2004.

2015 ***An updated version of Working Together to Safeguard Children*** released in March 2015 by the Department for Education. This piece of legislation included changes regarding allegations of abuse against those who work with children, requirements on local authorities to notify serious incidents and the definition of serious harm during serious case reviews.

Figure 5.1 Timeline illustrating when major safeguarding and child protection legislation was introduced in England.

This completely original thought immediately provided clarity and changed the direction and scope of the second cycle of Action Research. Information about safeguarding and issues around safeguarding in general, and safeguarding in music education specifically, will be explored in more detail in section 5.2.2. Details of its inclusion in the second cycle of Action Research are found in section 5.3.2 and 5.4.2.

5.2 New Directions

Having identified two 'lightbulb moments' which led to the conception of using assessment as a vehicle for increasing awareness of risk factors for injury (5.1.4), and of including injury prevention under the general umbrella of 'safeguarding' within the school (5.1.5), section 5.2 will explore in greater depth pertinent issues around assessment for learning (5.2.1) and safeguarding (5.2.2).

5.2.1 About Assessment

My experience of ineffective health promotion activities at the school can be explained in the context of students being able to ignore teaching if, for example, they see it as irrelevant (Brown, 2004). In this context it is easy to understand how the pupils saw health promotion and injury prevention as irrelevant and as a low priority at the school, when activities linked to health promotion or fitness were visibly not being prioritised within the school culture. Examples of this were the low priority that PE lessons and any other type of physical activity had in the school. This was illustrated by the appalling material condition of the school gym, with its leaking roof, absence of heating, concrete floor, and almost unworkable acoustic. PE lessons were often cancelled at very short notice if another more highly prioritised, usually music related activity, was being held and either pupils or the school gym were required.

Pupils were being given the message that physical activity and health promotion activities were not important. Historically and culturally within the wider tradition of classical music instrument training, which influences attitudes and practices within the school, there was no obvious need, and minimal encouragement, for pupils to take notice of health promotion material and to learn about injury prevention and health promotion.

In order for learning to take place, there must be motivation, and in relation to health promotion, this had been lacking at the school.

The introduction of new material at this point in the thesis requires the exploration of new literature to inform my thoughts about using both assessment and safeguarding. In the

The most recent statutory guidance highlights that **all** school and college staff have a responsibility to provide a safe environment in which children can learn: staff in schools are acknowledged to be an important part of the safeguarding system for children, and promoting the welfare of children is seen to be everyone's responsibility. Staff should make sure that their approach is child centred, meaning that they should consider at all times, what is in the best interests of the child. Safeguarding and promoting the welfare of children statutorily includes preventing impairment of children's health, ensuring that children grow up in circumstances consistent with the provision of safe and effective care, and taking action to enable all children to have the best outcomes ('Statutory Guidance for Schools, Keeping Children Safe in Education: for Schools and Colleges', 2016). It is clear from the high incidence of preventable playing-related musculoskeletal disorders seen at the school, with the lack of knowledge about risk factors amongst key-stakeholders, with the lack of engagement with the topic, and with inadequate facilities and provision for physical exercise, that the school was failing to maintain a safe environment, and to promote the welfare of its pupils, in relation to maintaining the musculoskeletal health of young musicians.

Safeguarding at the school falls under the responsibility of the designated senior person for child protection, supported by two child protection deputies. The designated senior person for child protection is a member of the school senior management team, and the two deputies are full time members of staff within the school: one within the boarding houses, and one other. They are supported by the head-teacher and the board of governors. The role of the designated senior person for child protection is to manage referrals and involve the police or other agencies when necessary, to participate in appropriate and timely training, and to increase awareness of child protection and safeguarding issues, within the school.

The school has a raft of policies that are housed under the umbrella of 'safeguarding'. These include policies that are directly linked to child protection and also policies that are designed to cover broader safeguarding issues. Some of the policies housed here include:

- safe recruiting
- supervision of pupils,
- anti-bullying
- health and Safety
- acceptable use of ICT

Despite genuine attempts at providing a safe environment in which children can learn, the school was failing to provide enough information to the key stakeholders about risk

factors for playing-related musculoskeletal disorders and therefore was not taking adequate measure to prevent injuries.

5.2.2.2 Historical background to safeguarding in relation to the specialist music schools

There are five specialist music schools in the UK. Four are in England and one is in Scotland. They are all independent boarding schools with charitable status. In recent years, safeguarding and child protection have become highly visible priorities within this cluster of schools as a direct result of numerous historical allegations and cases of sexual abuse of pupils within the schools. Although there is no peer reviewed research about this, a brief trawl through reputable and reliable online news sources reveals that allegations of sexual and emotional abuse extend across not only all five of the specialist music schools in the UK, but also to Conservatoires, and to La Sistema, the music training famous for bringing classical music to children from the slums of Venezuela. This hints at an extremely widespread problem which almost certainly holds its roots in the classical music education tradition of master / apprentice, one-to-one pedagogy, with highly sought after teachers being elevated to positions of immense power and exerting control within the pupils' lives. Davidson et al., (1998) identified the significance of warmth in the relationship between pupils and early instrument teachers and point out that personal warmth is most typically found in relationships characterized by affection and intimacy, such as those between spouses, or parents and children. Parents of successful young musicians frequently attend instrumental lessons with their child (Davidson et al., 1998) and it seems entirely possible that pupils may establish familial-type relationships with initial teachers partly in response to close parent/teacher contact with the teacher resultantly being perceived as a parental figure.

Most allegations have been historical, dating back to the 1970's, 1980's and 1990's. A very high profile case involved the director of the national youth choirs of Great Britain, who had been, at the time that the allegations took place, director of music at one of the specialist music schools. During the trial, the violinist who made the allegations committed suicide and the trial ended with the alleged perpetrator being found guilty of sexually abusing a pupil and resulted in him being given a six-year custodial sentence. As a direct result of this trial, a nationwide police investigation was prompted after dozens of former pupils from music schools and Conservatoires came forward to accuse other music teachers of sexually abusing them or their peers as children or young adults. This situation is replicated across elite sports

coaching with similar allegations made within football coaching, athletics coaching and swimming coaching.

Within organisations where there is a significant power differential between the child and the teacher/coach/instructor, and where the teacher/coach/instructor is regularly able to be 'one to one' with pupils, the issue of child protection and safeguarding has become a priority issue.

In instrumental teaching instrument teachers are working in a situation that can be emotionally charged, arguably not only because of the power differential, but also by nature of participating in a creative process that has the capacity to evoke strong emotional responses. The potential for situations where abuse can occur must be forefront in instrument teachers and school management mind.

In the next section I explain how with this background, playing-related injury prevention inevitably became a safeguarding issue.

5.2.2.3 Injury Prevention and Safeguarding: a logical inevitability.

Safeguarding, in relation to music students health and wellbeing, was raised by Williamon et al. in 2009, but it was the combination of three factors led me to the realisation that injury prevention in the pupils was a safeguarding issue at the school. These three factors are:

- the identification of risk factors for playing-related injuries through the original audit (4.1.1), which strongly suggest that playing-related injuries in the pupils are largely preventable (Chesky et al., 2006),
- a thorough exploration and deeper understanding of safeguarding in schools (5.2.2.1, 5.2.2.2) that clearly indicates safeguarding must include 'Preventing impairment of children's health and development' ('Working Together to Safeguard Children', 2013),
- the legal duty of care that I have to my patients as a result of membership of my professional body, which requires me to act in ways that protect their safety (Chartered Society of Physiotherapy, 2013). This means that along with the original moral imperative to improve the situation at the school, and with the intellectual curiosity to embark on the EdD, I have a legal responsibility to protect my patients, and this must include increasing stakeholder awareness of risk factors for injury.

This combination of factors provides significant validation to this project and has led inevitably, to me raising injury prevention as a safeguarding concern within the school.

5.2.3 New Directions - Summary

In this section I have introduced how inclusion of questions about risk factors for injury within the instrument assessment process at the school, could be used as a mechanism to increase key stakeholder awareness of those risk factors.

I have also provided a working definition of safeguarding and described the differences between safeguarding, child protection and duty of care. I then provided details about legislation and statutory guidance relevant to safeguarding children in the UK, before looking at historical child protection and safeguarding issues within specialist music schools in the UK. This led to the logical inevitability of bringing together injury prevention and safeguarding.

In the next section, I describe the conceptualisation of the second cycle of action research, which developed both of these ideas into practical strategies to increase awareness of playing-related injuries and their prevention amongst key stakeholders within the school.

5.3 Conceptualisation

In this section I am going to discuss the conceptual underpinning of the second cycle of Action Research which emerged directly from reflection on findings from the first, and from two critical incidents.

The process of including key stakeholders in early designs of a risk assessment tool during the first cycle of Action Research, enabled the exposition of new factors, the conception of two radical ideas, and the subsequent development of these ideas into two new strategies. The original plan to design and develop a risk assessment tool became a significantly less important part of the overall picture, and the reflexive nature of Action Research enabled this strategy to be dropped. From the focus group meetings and the surveys, the following key information emerged:

- that there was widespread lack of knowledge across key stakeholder groups about all five risk factors for playing-related injuries at the school,

- that instrument teachers are highly influential on their pupils and are perceived by parents to be a 'first port of call' for advice about playing-related pain. This places instrument teachers in a position of particular responsibility,

and the following suggestions were made:

- Injury prevention information could be disseminated within the school and to parents and pupils in a variety of formats:

    - In the pupils 'school planner'
    - To new pupils and parents when they visit in July, prior to starting in September
    - To new pupils during induction week in July
    - By using social media: re-launch 'What's that, Henry?' fb page

As a result of these key findings and suggestions, one aim for the second cycle of Action Research was to try and increase knowledge of the five risk factors for playing-related musculoskeletal disorders across the key stakeholder groups at the school. A second aim is to try and ensure that the instrument teachers were providing accurate information to their pupils about risk factors for injury. A third aim was to use a variety of mechanisms, identified in the first cycle of Action Research to disseminate accurate information about risk factors for injury to stakeholders at the school. In the following section I will expand on two radical strategies developed to address these key findings.

5.3.1 Utilising the Instrument Assessment Process

Returning to Browns (2004) observations, first described at the start of section 5.2.1, that students are able to ignore our teaching if, for example, they see it as irrelevant, he acknowledges that pupils do however, have to participate fully in any assessment process in order to succeed (Brown, 2004). This can be highly motivating.

The pupils are assessed to monitor progress on their instruments at least once per academic year. The assessments are carried out by the respective head of department. Failure of an assessment can lead to the loss of their place at the school and assessments are taken very seriously by the pupils. With this in mind, the concept of introducing some aspect of health promotion and injury prevention to the pupil instrumental assessment process became

an obvious way to increase the likelihood of pupils engaging with the topic of injury risk and injury prevention.

I wanted to do this as effectively as possible. The focus group meetings and the surveys had revealed that pupils and parents both seek and highly value advice from the instrumental teachers (4.6.1, 4.7.5.3), and so to include instrument teachers in preparing pupils for this component of the instrument assessment seemed a logical and hopefully fruitful way forward.

A full explanation of how information about injury risk and injury prevention was included in the schools internal instrument assessment process is provided in sections 5.3.1 and 5.4.1.

5.3.2 Including Safeguarding

The second radical idea for the second cycle of Action Research was to include injury prevention under the umbrella of safeguarding at the school. This idea emerged as I became increasingly frustrated with repeatedly treating injuries caused by risk factors that were avoidable, suggesting that the injuries themselves may well have been preventable. As a full member of the CSP, I have a professional and legal obligation, via 'duty of care' to protect the safety of my patients. This provides support for and consolidates my moral and ethical stance of wanting to prevent, wherever possible, injuries in young musicians.

Beyond healthcare settings, duty of care requirements also impacts on education settings: the National Union of Teachers (NUT) states that the as part of a teachers' duty of care to pupils, teachers are required to do all that is reasonable to protect the health, safety and welfare of pupils ('NUT Notes 2013-2014', 2014). This clearly implies that the school and its staff, have a duty of care to the children and this includes measures to protect the health and welfare of the pupils. In a specialist music school, this must include active measures to protect pupils from potentially high risk behavior in relation to instrumental playing.

The main influences on pupils instrument playing at the school are the visiting instrument teachers. Additionally, the boarding house staff, the practise supervisors and the pupils (via peer group influence) influence behavior towards practise. The visiting music teachers at the school are renowned for their performance and teaching skills, but instrument teaching is an entirely unregulated profession, and there is no recognized code of practice that instrument teachers are professionally obliged to uphold, nor framework to provide guidance

on best practice in teaching. They are, however, obliged to participate in school safeguarding training. If information about risk factors for playing-related injuries were included in the safeguarding policy and within safeguarding training then this would provide information via a route they have to participate in, and a framework for instrument teachers to help pupils. The mechanism by which this was done is explained in Section 5.4.2.

5.4 Planning and Implementing Change

The second cycle of Action Research involved three strands of activity aimed at addressing the widespread lack of knowledge across key stakeholder groups about five risk factors for playing-related musculoskeletal disorders at the school (4.6.5, 4.7.5.3, 4.7.6) and involving instrument teachers, as key stakeholders (2.2.6, 4.6.1) in providing accurate information to pupils about risk factors for playing-related injuries. In this section I will be describing the process of introducing an aspect of injury prevention into the instrument assessments and describing the process of involving injury prevention within the safeguarding framework of the school, before presenting the health promotion activities that took place to support these two initiatives. This will take the form of a written report of these activities, before the impact of these interventions is presented and discussed.

5.4.1 Instrument Assessments

The idea of including an item relating to risk factors for playing-related injury within the instrument assessment and re-audition process was introduced in section 5.3.1. The concept was to utilise the assessment process as a mechanism to raise the profile of and increase engagement with risk factors for playing-related injury (Assessment Reform Group, 2002; Blanchard, 2009).

In the next sections I am going to describe the development of the questions that would be included in the assessment and describe the roles of the heads of departments and the instrument teachers within this initiative

5.4.1.1 Development of Key Questions for use in Instrument Assessments

I decided to keep the format as simple as possible by providing a colour coded handout about the five risk factors, and an accompanying series of questions that might be asked, based on the information in the handout. The handout is shown in Figure 5.2.

There are 5 main Risk Factors for Playing Related Injuries

Risk	Strategies to help lower the risk
Sudden increase in playing time • Muscles and tendons need to gradually get stronger and fitter	• Increase playing time gradually to allow time for muscles and tendons to get stronger and fitter
Introduction of new repertoire with different technical demands • New technical demands can place new stress and strain on muscles and tendons	• Be aware to start gradually, until your arms and hands are used to the new demand. Practise new pieces in the middle of a practice session, after you have warmed up, and before you are tired
Posture or position when playing • Our bodies are happiest and healthiest when we maintain a neutral position, which places least load on joints, tendons and muscles	• **Aim** for symmetry and alignment. Return to this when you are NOT playing
Stress • Remember that stress can make our muscles tense, which increases the workload they are doing. • It can also reduce freedom of movement if our muscles are 'holding on	Be aware that stress from other aspects of life (such as exams, school work, relationships) can affect how our muscles behave when we are playing
Growth Spurt • Immediately after a growth spurt our muscles and tendons are more vulnerable to injury	• Be aware of whether you are having a period of rapid growth. If you are, this is not the time to suddenly increase practice time, to introduce very different repertoire, or to change instrument • Allow sufficient time to adjust to physical changes

NB: The more risks at any one time, the greater the risk of injury

Figure 5.2 Handout showing Five Risk Factors for Injury and Strategies to help Lower the Risk

This formed the basis of the questions that were to be asked in instrument assessments. The questions are shown in Text Box 26.

1. Can you tell me two risk factors for playing related injuries?

2. X is one of the risk factors for playing-related injury.
   Can you tell me how you might lower this risk?

Text Box 26 Questions to be asked in the Instrument Assessments based on the Handout

The next task was to ensure that the pupils received the information on the handout. This needed to involve the music HODs and the instrument teachers as the most influential stakeholders. In the next two sections I will explain how this was attempted.

5.4.1.2 The Role of the Heads of Departments and the Instrument Teachers

It is clear that the instrument teachers are often the primary and most significant influence on the pupils (4.6.1, 4.7.5.3), and this concurs with the literature (2.2.6). For the instrument teachers to be providing information to the pupils, that would then be assessed by the HODs, ensured that the pupils could only perceive that this information was emanating from the music department, rather than earlier health promotion initiatives (4.4.1) which was overtly being delivered to the pupils from the school medical centre.

I approached the HODs, initially via email, and then met them to explain my rationale for wanting to do this. Once the HODs had agreed that they would include this element in the assessments, I ensured that they felt happy with the information provided on the handout and with the questions that could be asked. The HODs sent a letter and the handout to all of the visiting instrument teachers explaining about the new component of the instrument assessment and asking them to ensure that they cover the information with their pupils. This letter is shown in Text Box 27.

Date: 5th February 2016

Dear X.

We are keen to work towards reducing the number of preventable playing-related injuries in the pupils at The Purcell School. This is part of a move towards improving pupils' wellbeing. There is a lot of research from Conservatoires about performance wellness and injury prevention in musicians, and it highlights the importance of preventing injuries in pre-conservatoire level musicians.

To work towards this, during the next round of pupil assessments we are going to include a single question linked to either injury prevention or health promotion.

To help them prepare for the assessment we would like you to talk to your pupils about the risk factors on the following page.

The question will be either:

> "Can you tell me two risk factors connected to playing related injuries?"
>
> or
>
> ''xxxxx is one of the risk factors for playing related injury. Can you tell me how you might lower this risk?"

Thank you for your help in this.

Music Heads of Departments

Text Box 27 Letter to Instrument Teachers 5th February 2016

Having informed the instrument teachers and asked them to cover this information with their pupils, we then needed to inform the pupils of this initiative. We arranged a whole school assembly for February 8th 2016, in which I would provide information about risks for playing-related injuries via a PowerPoint presentation. We introduced a fictional cartoon character called 'Dr Muso', and the head of brass and percussion dressed as Dr Muso, while one of the pupils dressed in double bass costume, and one of the sixth formers acted as Dr Musos assistant. Copies of the slides use in the PowerPoint presentation can be seen in Appendix L. Dr Muso and his 'walking bass' are shown in Figure 5.3.

Figure 5.3 Dr Muso and his Walking Bass

The method of presentation in the assembly caught and held the pupils' attention. The assembly was subsequently mentioned in the schools' weekly newsletter, which is sent to parents and pupils. The parents were sent an email on February 12th informing them of the additional component of the instrument assessments. In the same week (8th - 12th February 2016) I placed a series of posters illustrating the five risk factors for playing-related injury on walls and doors throughout the school: in practice rooms, boarding houses, school corridors, and the health centre. This series of posters, reduced in size, is shown in Figure 5.4.

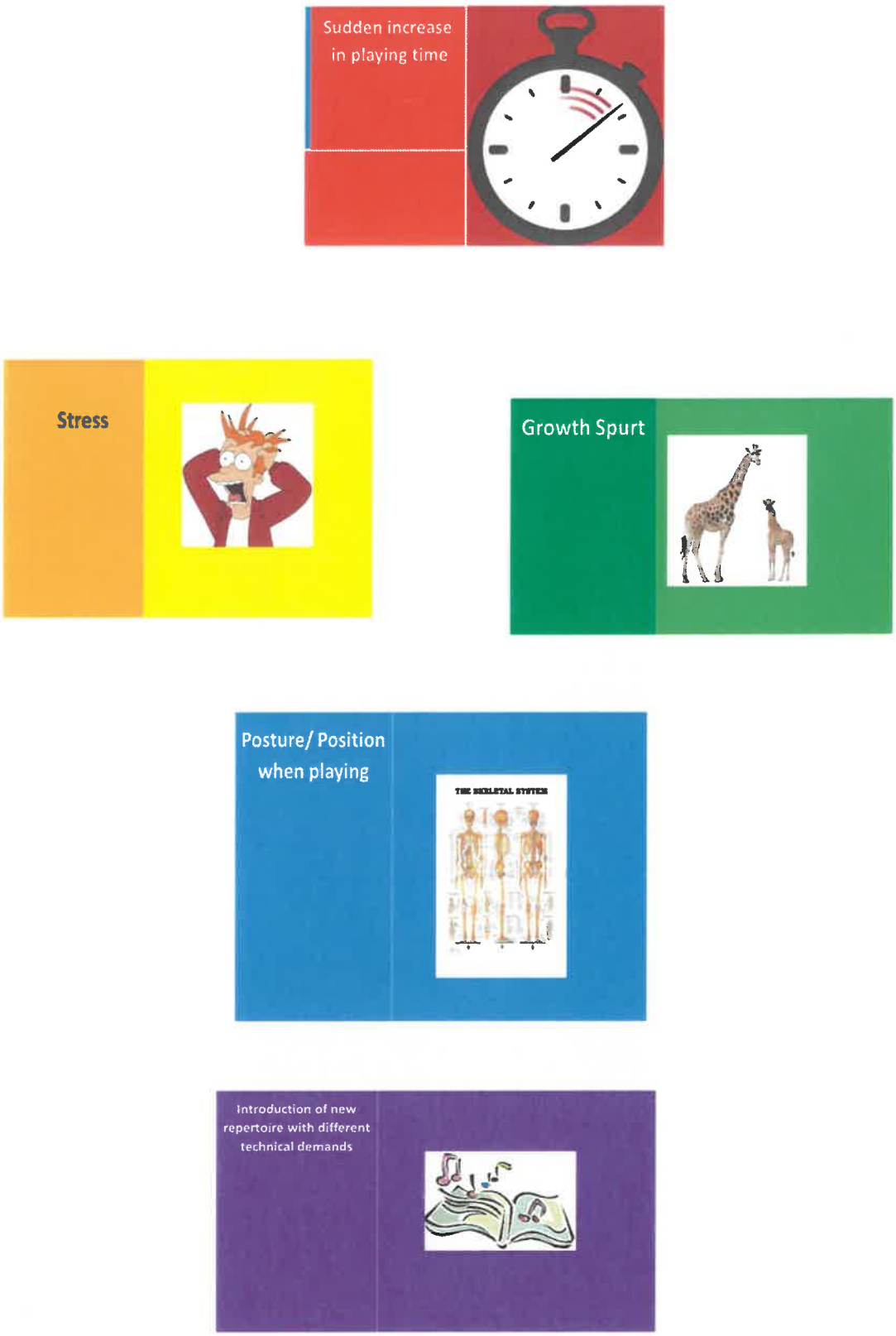


Figure 5.4 Posters illustrating the Five Risk Factors for Playing-related Injury

The entire process, from germinating the idea of including a component about risk factors for injury within instrument assessment, to the first assessments which included it, was complex and time consuming. For ease of reference, a diary of key events in this process is shown in Table 5.3.

Table 5.3 Diary of events leading to 'Risk Factors for Playing-related Injuries' being Included in Instrument Assessments

Nov 21st 2015	BAPAM Training Day: when the idea was geminated
Nov 25th 2015	Spoke to head of strings and head of keyboard about the possibility of including this within instrument assessment. They will think about it.
Jan 13th 2016	Meeting with head of strings. He is keen that strings should not act unilaterally, and thought it important that all departments agree. He will speak to HODs of keyboard, brass and percussion. I provided a draft of a letter to be sent to the instrumental teachers
Jan 20th2016	All HODs agree to include an element of injury prevention or health promotion within the next round of assessments (scheduled for March 2016). Letter to instrumental teachers written. Posters that will be put in boarding houses and practise rooms designed.
Jan 21st2016	email from Percussion HOD. Suggest that we introduce it to the pupils via whole school assembly. On Feb 8th.
Feb 5th 2016	Letter sent to instrument teachers from HODs informing them that injury prevention will be included as part of the next instrument assessments and asking that they read the handout and go over the information with their pupils, in order to be able to help prepare the pupils.
Feb 8th 2016	Whole School Assembly: 'Introducing Dr Muso', informing Pupils that they will be asked about Injury Prevention in next assessments
Feb 12th 2016	email to all parents re 'new initiative' to instrument assessments.
Feb 8th-12th	Posters displayed throughout school
Mar-May 2016	Instrument Assessments Containing Questions about Risk Factors for Injury

In Section 5.4.1, I have described the process of introducing questions about risk factors for playing-related musculoskeletal disorders into the schools' instrument assessment process. In section 5.4.2, I will introduce the second significant change that was introduced within the school during the second cycle of Action Research.

5.4.2 Safeguarding

As explained in section 5.2.2, duty of care (originally; duty to take care) places a legal duty on me and on all staff members of the school, to provide a reasonable standard of

care to the pupils and to act in ways that protect their safety. I first talked about injury prevention in relation to safeguarding on January 19th 2016. By February 10th a 'safeguarding amendment' form had been distributed to the visiting instrument teachers. This process is illustrated as a timeline in Table 5.4.

Table 5.4 Timeline illustrating events leading up to distribution of 'safeguarding amendment form' to visiting instrument teachers.

Jan 19th 2016	Conversation with the Musicians Unions National organiser for Education and Training, about how they are looking at reviewing their safeguarding advice/training, and how Injury Prevention could fall under the Safeguarding Umbrella.
Jan 20th 2016	Meeting with the Headmaster at the school about my EdD project and about injury prevention/safeguarding. He is happy for me to contact the Schools 'Safeguarding Lead' about including information about injury prevention in a Safeguarding session that all new visiting Instrumental teachers must attend.
Jan 20th 2016	emailed school safeguarding lead: She thinks this is a good idea. Sent handout that could possibly be used, for her to comment on.
Feb 3rd 2016	Letter and hand-out re injury prevention produced for instrument teachers and to be used as part of initial safeguarding training.
Feb 10th 2016	'Safeguarding amendment' form and letter completed and distributed to all current visiting instrumental teachers

5.4.2.1 Developing the New Form

All visiting music teachers are required to participate in safeguarding training when they are initially appointed. This is updated annually at the start of each academic year. The safeguarding training comprises an online course and test provided by the county education service. Having gained the support of the headteacher and the safe-guarding lead, to include injury prevention within the safeguarding framework at the school, I developed a form to be distributed to the visiting music teachers as an addendum to their safeguarding training. The form included the same handout as for the information for the instrument assessments, with a slightly different introduction. The addendum to safeguarding training, showing the form and handout are shown in Figure 5.5.

Safe-guarding Pupils at [redacted] School.

Playing-related injuries in musicians have been shown to be largely preventable.

There are a number of clear risk factors for playing related injuries in elite young musicians, and as part of our safeguarding training, we believe that these risk factors should be widely known amongst all stakeholders in the school.

As part of our safeguarding training, we require you to read and act on the information on the following page.

Please sign to confirm that you have read and understood the information and return the form to [redacted], Safeguarding Lead.

If you have any questions about risk factors for injury, or injury prevention, please contact Sarah Upjohn, the school physiotherapist:

S.Upjohn@[redacted]-school.org

I confirm that I have read and I understand the information about risk factors for playing related injury

We believe that safeguarding of children also includes protecting them from acquiring preventable playing related injuries.

Please be aware that there are 5 main risk factors for playing-related injuries in the pupils here. The pupils are asked about these when they have instrumental assessments, so we would be happy for you to ensure that your pupils are familiar with them.

There are 5 main Risk Factors for Playing-related Injuries

Risk	Strategies to help lower the risk
Sudden increase in playing time • Muscles and tendons need to gradually get stringer and fitter	• Increase playing time gradually to allow time for muscles and tendons to get stringer and fitter
Introduction of new repertoire with different technical demands • New technical demands can place new stress and strain on muscles and tendons	• Be aware to start gradually, until your arms and hands are used to the new demand. Practise new pieces in the middle of a practise session, after you have warmed up, and before you are fatigued
Posture or position when playing • Our bodies are happiest and healthiest when we maintain a neutral position, which places least load on joints, tendons and muscles.	• Aim for symmetry and alignment. Return to this when you are NOT playing
Stress • Remember that stress can make out muscles tense, which increases the workload they are doing. • It can also reduce freedom of movement if our muscles are 'holding on'	• Be aware that stress from other aspects of life (such as exams, school work, relationships) can affect how our muscles are when we are playing
Growth Spurt • Immediately after a growth spurt our muscles and tendons are more vulnerable to injury	• Be aware of whether you are having a period of rapid growth. If you are, this is not the time to suddenly increase practise time, or introduce very different repertoire, or to change instrument. • Allow a month or two to get used to your new size and shape

N.B: The more risks at any one time, the greater the risk of injury

Figure 5.5 Addendum to Safeguarding training for Visiting Instrument Teacher

5.4.2.2 Distribution of Addendum to Safeguarding

The addendum to safeguarding training was distributed to the visiting instrument teachers via the named pigeon holes in the school staff room on February 10th 2016. This was one week after they received a letter from the HODs about including the same information about risk factors for injury within the instrument assessments.

5.4.2.3 Policy Change

In early November 2016, I approached the safeguarding lead at the school suggesting that to formalise the safeguarding initiative, playing-related injury prevention should be included within the schools' policies. This was raised and agreed at the next senior management team meeting and I was asked to write a policy. The policy was discussed at a meeting of the school governors and they agreed that it could be placed within the health, safety and welfare policies of the school. In May 2017, it was housed as health, safety & welfare Policy H5: Playing-related musculoskeletal injury prevention policy.

Staff were alerted to the policy via an email to all staff groups, including visiting instrument teachers, HODs, boarding house staff, practise supervisors and academic staff. The email explicitly highlighted that stake-holder responsibilities for injury prevention are clearly laid out in the policy. This was sent on May 23rd 2017.

A link to the policy was included in an item on the news page of the school website, on May 25th, and parents and pupils were alerted to the policy via the weekly school bulletin, on May 26th. A copy of this policy can be found in Appendix M.

5.4.3 Health Promotion Activities

A number of opportunities for health promotion activities were suggested by staff during the focus group meetings (Section 4.6.4). In the next section I am going to describe the activities that were employed and between January 2016 and January 2017.

5.4.3.1 The School Planner

At the start of every academic year, each pupil is provided with a copy of the school planner. This is an A5 sized spiral bound customised diary, which in addition to providing a week per view diary for the academic year, provides space for school information, policies, phone numbers, key dates, timetables, and a homework diary. I approached the senior

management team in June 2016 and asked if the next planner could include a section on risk factors for playing-related injuries. They agreed that it could and I produced suitable information. This was included in the 2016-17 pupil planner and can be seen in Appendix N.

5.4.3.2 The new pupils and parents visit in June

One of the risk factors for playing-related injury is a sudden increase in playing time and it is not unusual for pupils to rapidly increase the amount of time they spend practising during the summer holiday prior to starting at the school. During the penultimate week of the school year, the school holds an event for new pupils and their parents who will be joining the school in September. It provides them with the opportunity to hear a welcome talk from the head-teacher, a talk about finances from the school bursar, to meet the school nurse, to spend time in the boarding houses meeting boarding house parents, other support staff and some of the current pupils. Following a suggestion from the boarding house staff (4.6.4) I was allowed to talk to the new pupils and parents for 20 minutes. Using a PowerPoint presentation, I presented the five risk factors for injury in the same format that the information appears in the planner. I particularly emphasised the importance of increasing practice time gradually, rather than suddenly between then and when they join the school in September. Following the presentation, I stayed to talk to parents and pupils giving them the chance to meet me and to ask specific questions.

5.4.3.3 Induction week

During the first ten days of the academic year, there is an induction period for new pupils while they get used to boarding, to the new timetable and to new instrument teachers. During this time, I was timetabled to give a sixty minutes talk about risk factors for playing related injuries to new pupils. In fact, the attendance at this even was low. Pupils had been given the impression that it was on optional session and only ten came to the presentation.

5.4.3.4 Dr Musos letters to Pupils for Key Events

There are key points when pupils are more at risk for injury and one of these is when they may be tempted to increase their playing time and, additionally, are stressed. This commonly occurs when are preparing for auditions, masterclasses, recitals, examinations or assessments. I decided to target pupils who were approaching assessments and auditions and send them a reminder that they were approaching a period where risk factors might be increasing. I sent personalised and signed letters from Dr Muso, to each of the upper sixth

form pupils who were preparing for Conservatoire auditions, to each pupil in year nine and 11 who were preparing to re-audition for a place in year 10 or year 12, to each instrument group as they prepared for their instrument assessments, and to each member of the school orchestra who were involved in an orchestra course. This set of letters can be found in Appendix O.

5.4.3.5 Orchestra Course

One activity which increases the risk of playing related injury is a residential orchestra course. The audit revealed an increase in incidence of playing-related injuries in pupils returning from residential orchestral courses (4.1.1). In such courses young musicians come together to play orchestral repertoire. They are often playing for many hours each day in sectional and full orchestral rehearsals. At the school, orchestral courses run twice yearly in March and October. They involve three full days of rehearsals and finish with a concert in a prestigious concert hall. Additionally, many of the pupils at the school are members of county or national youth

Orchestral playing holds particular challenges for upper strings (violin and viola) and woodwind players (flute, oboe and clarinet), who, under usual circumstances stand up for lessons and stand up when practising. In orchestral playing they are required to sit. Most have never had a lesson in how to play while sitting or how to sit while playing. In orchestral courses they are, from the perspective of the musculoskeletal system, performing a new activity that they are not used to doing, and are required to play for many hours each day. It is not unusual for such players to develop back and shoulder girdle pain during the course.

For the orchestral course that was scheduled for a Friday, Saturday and Sunday in October 2016, I wanted to highlight to pupils and staff that orchestral courses presented some known hazards to the pupils, but there are a number of measures which are commonly used in the field of occupational health for desk-based (sitting) workers, that could reasonably be adopted during orchestral courses to reduce risk of pain and injury.

The head of strings and the head of brass and percussion, who were running the course with a guest conductor, were extremely helpful. I sent a letter from Dr Muso to each member of the orchestra during the week before the course started, and I displayed specially designed health promotion posters in each of the boarding houses, in the school hall where the orchestral rehearsals were to take place, and in the school dining hall. This set of posters

can be seen in Appendix P. The head of brass and percussion agreed that I could talk to the whole orchestra before the start of the first rehearsal on the Friday morning.

Once the members of the orchestra had gathered in the hall, the head of brass and percussion asked the whole orchestra to come outside and he led a jog around the perimeter of the school building. We finished at the school tennis court, where I spoke to them about the significance of the demands that they would be facing during three days of playing and about simple measures that they could take to mitigate those demands;

- the importance of keeping soft tissues well hydrated by drinking enough water
- the importance of warming up before beginning a rehearsal
- the use of 'micro-pauses', or moments when they are not playing, to let go of accumulating tension, reposition themselves and stretch out tight muscles
- the importance of eating to provide fuel for the body: carbohydrate for muscle activity
- the importance of getting out of playing position during any breaks and going for a walk rather than going and sitting down elsewhere.
- the importance of rest and recovery time for the muscles in the evenings: it is quite common for pupils to try and play a full day in an orchestral rehearsal and additionally attempt two or three hours of individual practice during the evening.

5.4.3.6 Facebook page

In May 2013 I launched a fb page called 'What's that, Henry?' (4.4.1.2). The intention was to use a popular form of social media to post items of news and information, aimed at stimulating interest in, raising awareness of and generating conversation about instrumental musicians' health and wellbeing and performing arts medicine. The initial fb page was not successful with few likes and fewer followers. However, in December 2016, with injury prevention having a higher profile throughout the school, I decided to re-publicise 'What's that, Henry?' and make the page active again. In December 2016, I sent every pupil in year nine and above (all pupils over the age or 13) a memo alerting them to the existence of the 'What's that, Henry?' Facebook page, inviting them to like and follow the page. I also posted a welcome post on the Facebook page and invited visitors to look at previous posts, which date back to June 2013.

5.4.4 Planning and Implementing Change: Summary

Section 5.4 has been used to detail how the second cycle of Action Research was planned and implemented. I began in 5.4.1, by describing how injury prevention was included within the instrument assessment process at the school, how the questions to be used in the instrument assessments were designed, and how the information was disseminated to the visiting instrument teachers directly from the music department at the school. In 5.4.2, I explained how through duty of care, injury prevention became part of safeguarding at the school, and how playing-related injury prevention is now a school policy. The final section, 5.4.3, detailed a number of targeted health promotion activities that ran within the school between January 2016 and January 2017.

These three strands formed the 'action' component of the second cycle of Action Research. The impact of the second cycle of Action Research was evaluated by surveys to key stakeholder groups. In section 5.5 the findings from these surveys are presented and where relevant are compared to findings from the first cycle of Action Research, the findings are discussed, and the implications are stated.

5.5 Re-evaluation, Findings, Discussion and Implications

The second cycle of Action Research comprised the introduction of two significant new initiatives within the school (5.4.1, 5.4.2) as well as a raft of strategically planned health promotion activities (5.4.3). All of these were aimed at increasing awareness amongst key stakeholders, of risk factors for playing-related musculoskeletal disorders.

I assessed the impact of these initiatives by surveying four key stake-holder groups to re-evaluate their knowledge of risk factors for injury. I selected the parents, the pupils, and the instrument teachers because in the first cycle of Action Research these were the groups who were either least engaged with, or least knowledgeable about the issue. Additionally, I selected the Music HODs because of their pivotal role as an interface between the school and the instrument teachers.

In this section I will present and discuss the findings of each of these surveys, and state the implications. The findings are presented as graphs and selected excerpts from the text-based data are used to illustrate, illuminate or emphasise certain points. When possible, I directly compared results of surveys used to evaluate the first cycle of Action Research (4.7.5, 4.7.9, 4.8) with results of surveys used to evaluate the second. When comparisons between surveys are made, they are clearly colour coded and presented side by side.

I will then present and discuss findings of an audit of physiotherapy treatment notes written between September 2015 to March 2017. The findings from this audit are compared with findings from the original audit (4.1.1).

5.5.1 Second Parent Survey: Findings, Discussion and Implications

Between February and July 2016, (after the first survey and before the second) there had been significantly more communication targeted at the parents about the five risk factors for injury:

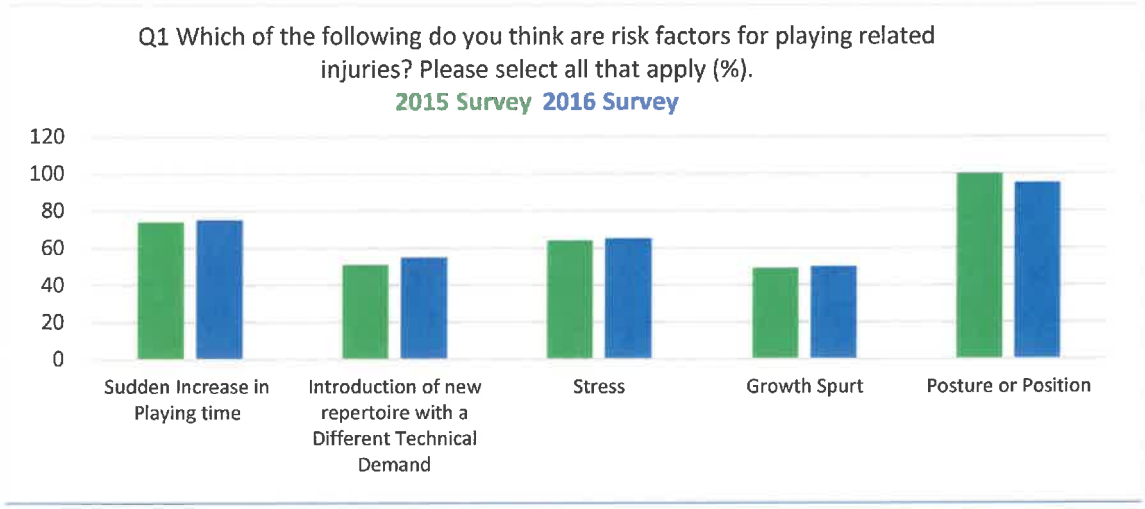
- an email informing them about the additional component in the instrument assessment in February 2016
- an item in the school newsletter about the 'Introducing Dr Muso' assembly in February 2016,
- a talk at the open afternoon for new parents and pupils in June 2016.

In order to maintain consistency, and to triangulate findings, a copy of the same survey that had originally been sent to parents in December 2015, was re-sent to current parents on 23rd November 2016. This use of overlapping methods at two different points in time strengthens the dependability (or reliability) of the project, and the triangulation supports the credibility of the project in terms of the trustworthiness framework (3.2.6 and Table 3.1).

The membership of the parent group would have changed only slightly, with the normal annual departure of some pupils (mainly upper sixth formers), and arrival of others (throughout the school year groups). This prompted fifty-seven responses in the first five days. A reminder was sent on 30th November. This prompted forty-three more responses in the second week. The survey remained open until December 17th 2016, and had an eventual total of 100 responses.

This is a unit response rate of 56 per-cent which is significantly higher than the unit response rate of 30.8 per-cent for the same survey distributed in December 2015 (4.7), and findings can be considered to be robust. As with the 2015 survey, the text-based answers were analysed by coding into emerging thematic categories from the text. In the next section I will present and discuss the findings from each of the survey questions in graphical format, comparing responses from the surveys distributed in 2015 and in 2016, before stating implications of the findings.

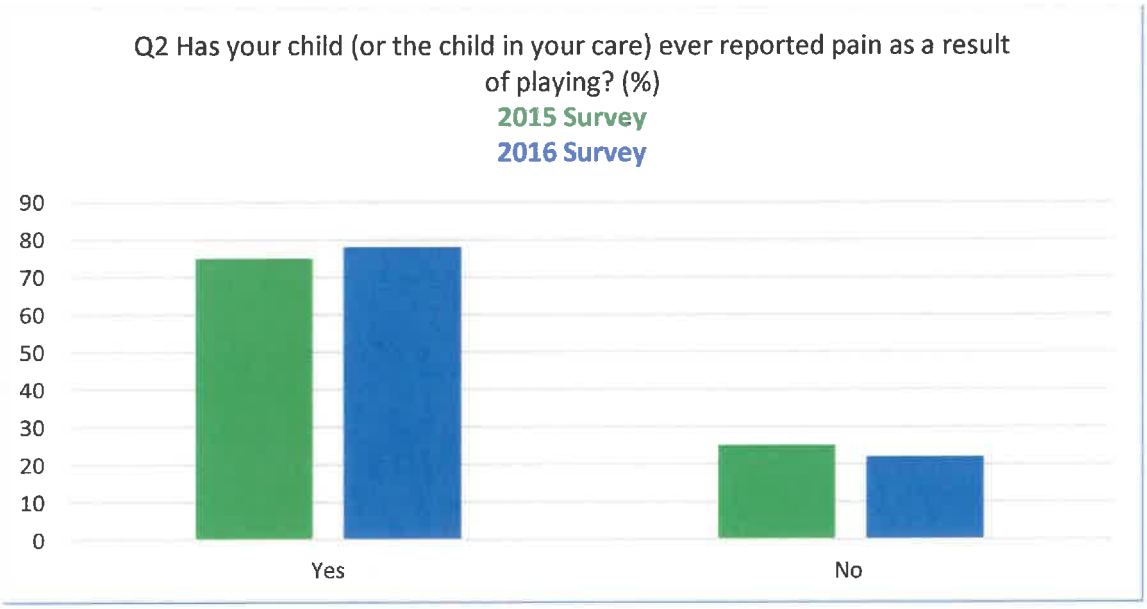
5.5.1.1 Question 1: Knowledge of Risk Factors.



Finding: When compared to the response to the same question a year earlier, the responses are startlingly similar. There has been no significant increase in parental awareness of the five risk factors for injury.

***Implication**: despite significantly more information about risk factors for injury being provided for and targeted towards the parents, their knowledge of risk factors remains incomplete and there remains a need to increase parental awareness of all of these risk factors for injury.*

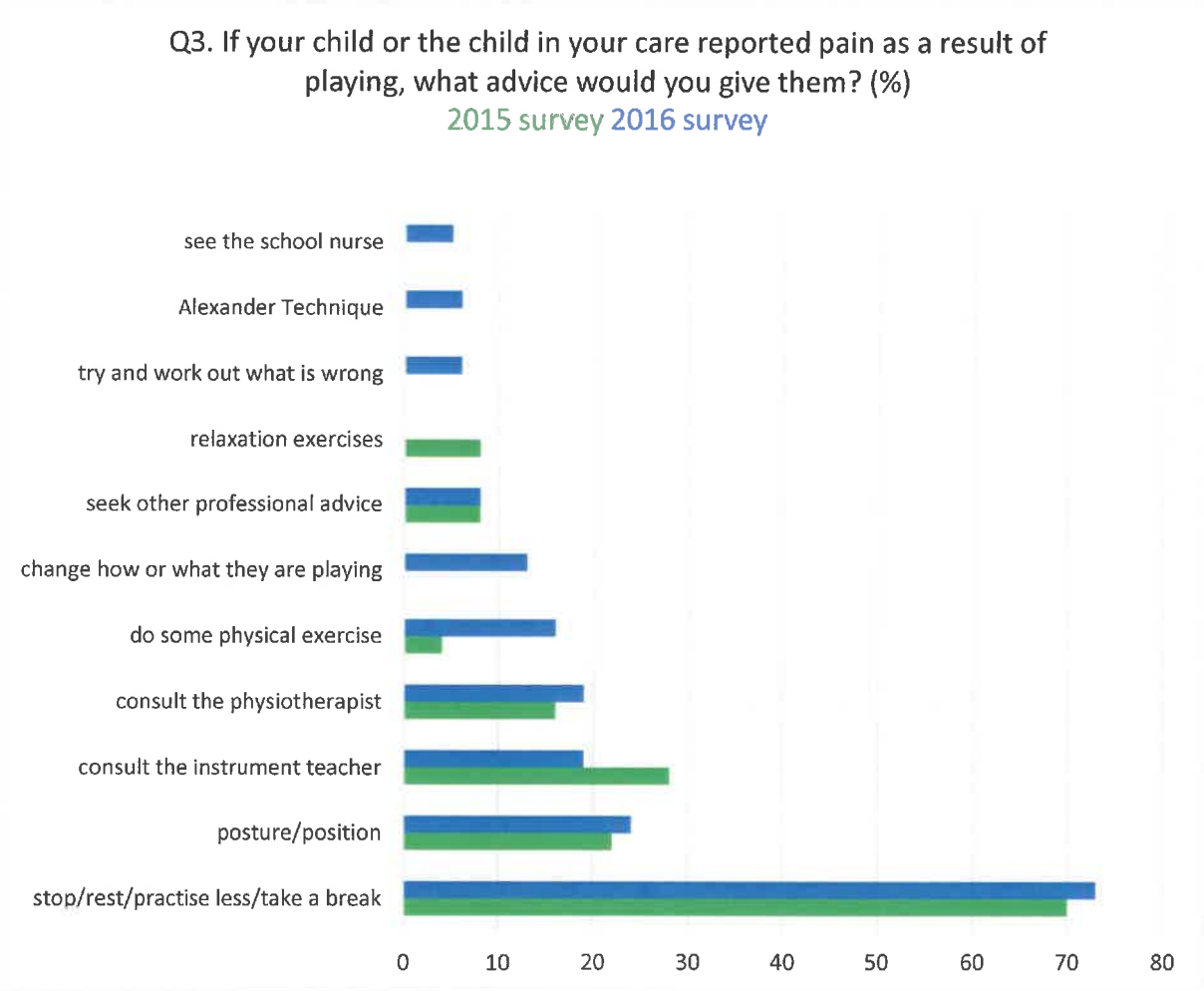
5.5.1.2 Question 2: Reported Incidence of Playing-related Pain



Finding: The response of 78 per-cent is unchanged from the previous years' survey. This figure is comparable with incidence levels for playing-related pain in young musicians, conservatoire students and professional orchestral players reported in the literature (Abreu-Ramos & Micheo, 2007; Ackermann et al., 2012; Ackermann et al., 2013; Blackie et al., 1999; Chan et al., 2013; Driscoll et al., 2011; Guptill et al., 2000; Kaneko et al., 2005; Kenny & Ackermann 2015; Ranelli et al., 2008; Vinci et al., 2015; Zander et al., 2010;: Zaza, 1998).

Implication: *The question asked about historical reports of pain and so the finding does not necessarily reflect incidence within pupils at the school during (or subsequent to) the second cycle of action research. That the incidence remains so consistent confirms the extent and consistency of the incidence of reported playing-related injuries.*

5.5.1.3 Question 3: What advice parents give.



This is the first question to show changes in the responses between the two surveys.

First Finding: This is the first question to show changes in the responses between the two surveys. The biggest difference is the number of responses indicating that they would advise doing some sort of physical exercise:

- In 2015 only four per-cent of respondents suggested physical exercise of some sort, and the only suggestion involved stretches of some kind.
- In 2016, 16 per-cent of respondents suggested physical exercise, and examples of physical exercise that were that were suggested by parents were broadly divided into two main categories: either specific activities aimed to counter the direct demands of playing, such as stretching or relaxing, or more generalised strengthening and cardiovascular-conditioning based activities such as Pilates, running or swimming.

Implication: *The number of responses and the responses themselves indicate that after the second round of action research the parents were more aware of the importance of physical activities beyond playing the instrument.*

Second Finding: in the 2016 survey

- 13 per-cent of parents made a comment indicating that they would suggest changing something about how or what their child was playing,
- and six per-cent stated that they would 'try to work out what was wrong'.

While both of these are small percentages, neither of these themes emerged in the first survey at all, and this represents a shift towards more active engagement from parents that playing-related injuries are preventable, and that identifying the cause can be beneficial.

Implication: *This suggests that the parents are not assuming that playing-related pain is inevitable, and they are actively problem solving to try and prevent recurrence.*

Third Finding:

In the 2015 survey

- 16 per-cent stated that they would consult the physiotherapist
- 28 per-cent stated that they would consult the instrument teacher.

In the 2016 survey

- 19 per-cent of parents stated that they would consult the physiotherapist

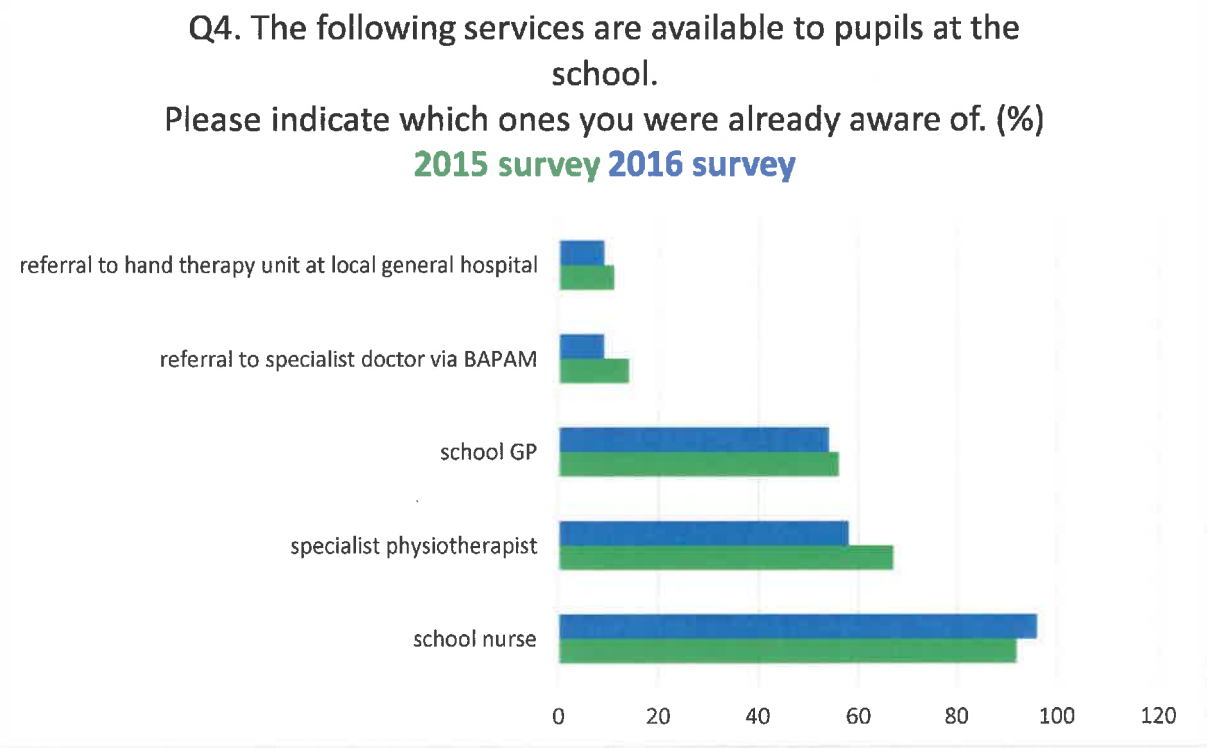
- 19 per-cent of parents stated that they would consult the instrument teacher

Implication: *between the first and second surveys, more parents stated that they would consult the physiotherapist and fewer parents stated that they would consult the instrument teacher about playing-related pain. This implies that more parents are aware that advice from a specialist physiotherapist can be beneficial, and reflects that communicating directly with the parents has increased awareness of the presence of, the skill set of, and the role of the specialist physiotherapist within the school community. It may also imply that parents may be becoming increasingly aware that instrument teachers are not necessarily be the ideal person to consult about playing related pain.*

Fourth Finding: in the 2016 survey the parents had four additional valuable and appropriate suggestions of what to advise their child, that did not emerge in the 2015 survey.

Implication: *the implication of this is that the parents are more knowledgeable about what to do if their child reports playing at the time of the second survey than at the time of the first survey.*

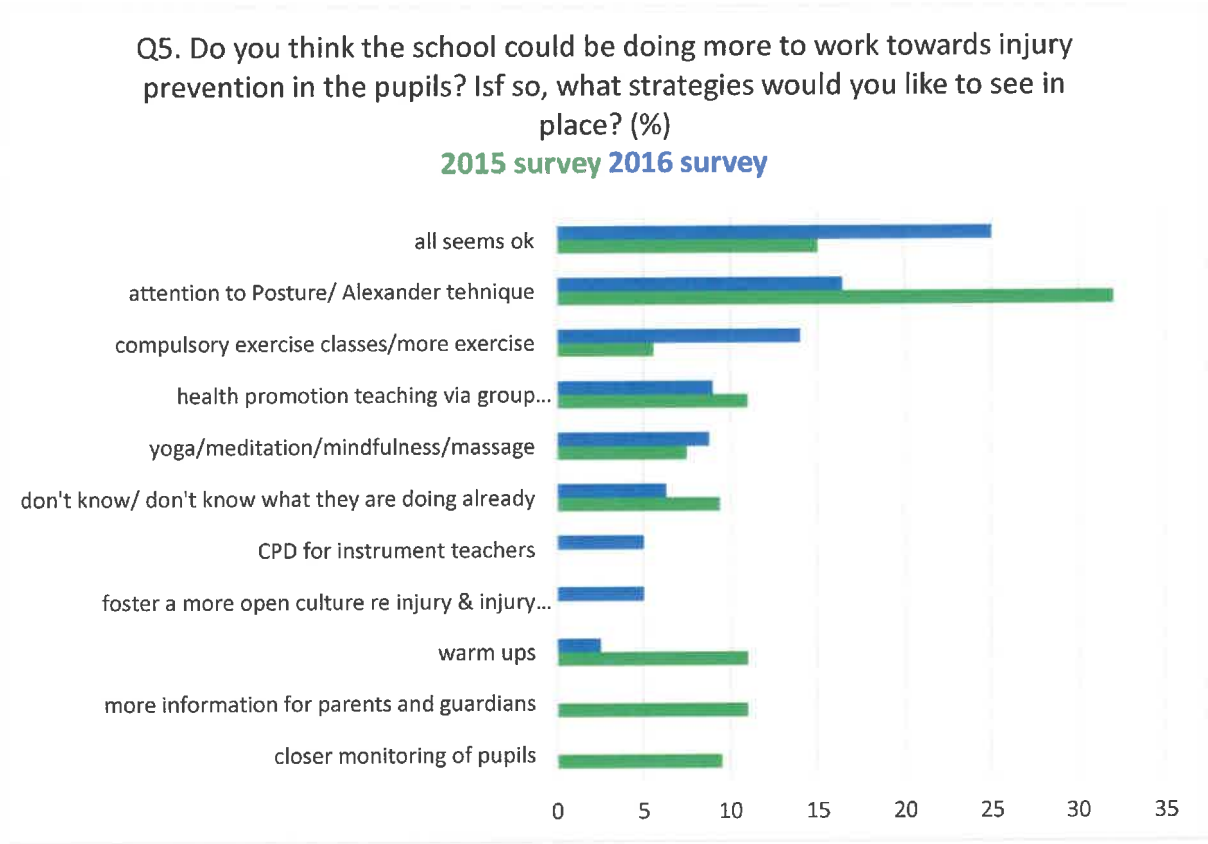
5.5.1.4 Question 4: Awareness of Services Available through the School



Finding: The responses show only a slight increase in awareness of most of the services available to pupils at the school between the first and second surveys. While it is perhaps understandable that parents may be unaware of specialist help available via BAPAM, or through the local hand therapy unit, it is concerning that not all of the parents are aware that there is a full time school nurse on site, a physiotherapist visiting weekly and access to a school GP. All this information is available in the school handbook for parents, and all parents are required to complete a medical form about their child, and submit it to the school nurse, at the time of enrolment at the school.

Implication: *The implication is that efforts to promote awareness of the services available through the school medical centre have been of limited success.*

5.5.1.5 Question 5: What more could the school be doing?



This question also gave the opportunity for parents to add additional responses, and a representative sample of these is shown in Text Box 28.

- *the school seems to have programmes in place already*
- *I think school is doing well on informing and preventing injuries*
- *I've been impressed with what happens already*
- *My opinion school does enough to work towards injury prevention.*
- *Not really been here long enough to know. I'm impressed so far with the information being given.*
- *I had several excellent experiences of how the school deals with injuries and prevention*
- *School is well-equipped to deal with injury prevention*
- *Great communication with parents. Students do not always convey back what they have been told at school.*
- *No. Current warm up advice and support when injured seems to be good.*
- *I believe they are doing all they can and are mindful of the students wellbeing.*
- *The school physiotherapist with specialism in musicians and dancers spoke to parents/guardians at Open Day. I was very impressed with her advice and believe that injury prevention is given high importance at Purcell School.*
- *I think school doing well.*
- *my child reported that the school gave already good advice and raised awareness.*
- *The signs about pain while playing and what to do are very noticeable around the school*

Text Box 28 Responses to Parents Survey Question 5: What more could the school be doing?

First Finding: There were two themes that emerged in the 2015 survey that did not emerge in the 2016 survey. These were 'closer monitoring of pupils' and 'more information for parents and guardians'.

Implication: *The emergence of these themes indicates that at the time of the first survey, the respondents were not happy with the level of monitoring of the pupils and with the amount of information that they had been provided with. Because these themes did not emerge as responses to the survey in 2016, it implies that there had been a shift and that parents did not feel the need to raise either of these two points.*

Second Finding: Two themes that emerged in response to the second survey (after the second cycle of action research) that did not appear in response to the first survey. These were: the suggestion of fostering a more open attitude towards playing related injuries and injury prevention, and the second was suggesting CPD for instrument teachers.

Implication: *This implies an acknowledgment and implicit understanding of a wider problem within the classical music tradition: the culture of secrecy and silence around playing related injuries (Rickert, et al., 2014). It also indicates (along with responses in*

section 5.5.1.3) that there may the start of a be a shift towards acknowledging that instrument teachers might benefit from education and training in matters related to playing related injury and injury prevention in young musicians.

Third Finding: There is a decrease in the number of responses 'don't know' / 'don't know what is currently being done'

- 2015 survey: nine point four per-cent
- 2016 survey: six point three per-cent

Implication: *This implies that during the second cycle of action research we have been successful at letting parents know what we are currently doing about playing-related injury prevention at the school.*

Fourth Finding: There was a marked increase in the number of parents suggesting making exercise classes compulsory or increasing the amount of exercise that the pupils do, between the survey in 2015 and the survey in 2017.

- 2015 survey: five point six per-cent
- 2016 survey: 14 per-cent

Implication: *This implies an increased awareness between the first and second survey of the importance and relevance physical exercise in maintaining the physical health of musicians.*

This may reflect that following the talk to the new parents and pupils in June 2016, the parents are more aware of the concept of their children being 'musical athletes', benefitting from thinking of caring for their bodies in the same way as young athletes and dancers do, with increased emphasis on the importance, relevance and benefits of cardio-vascular and cardio-respiratory conditioning, strengthening of muscles and increasing flexibility of soft tissue structures (Chan et al., 2013*).*

Fifth Finding: Between the 2015 survey and the 2016 survey, there was a decrease in the number of responses suggesting Alexander Technique, or some other form of posture work be done with pupils at the school:

- 2015 survey: 32 per-cent
- 2016 survey: 16.4 per-cent

Implication: *The implication of this finding is not clear. My feeling is that at the time of the first survey, parents were very aware of the importance of posture in relation to maintaining healthy playing but were not aware of other strategies. While posture remains an important issue, between the first and second survey, parents were made of additional important and complementary strategies such as the importance of cardio respiratory fitness, which showed in the fourth finding.*

Sixth Finding: There was a marked increase between the survey in 2105 and the survey in 2016 in parents who thought that 'all seems ok'

- 2015 survey: 15 per-cent
- 2016 survey; 25 per-cent

Implication: *The implication of this finding is that more parents thought that 'all seems ok' after the second cycle of action research. It may be that the increased communication to parents, about this topic (indicated in the first finding) has helped increase the feeling in the parents that 'all seems ok'.*

Seventh Finding: No parents in the second survey, compared to 10% of parents in the first survey, thought there should be closer monitoring of pupils or thought that more information should be provided to parents/guardians.

Implication: This shows that the deliberate strategies to increase communication to parents informing them of what we were doing was successful.

The additional comments provided reinforcement that parents knew what strategies were in place and were reassured that pupils musculo-skeletal health was being looked after.

5.5.2 Summary

The second parent survey had a response rate of 56 per-cent, significantly higher that the response rate of 30.8 per-cent to the first parent survey. This corresponds to the increased

direct communication with the parents from me between the first and second surveys, about preventing playing-related injuries.

The survey revealed that some aspects had remained essentially unchanged between the first and second surveys. These were:

- There has been no significant increase in parental awareness of the five risk factors for injury.
- Reported incidence of playing-related injuries (78 per-cent) is unchanged from the previous years' survey and still aligns with the industry norm (2.2.2).
- There was only a slight increase in awareness of the services available to pupils at the school between the first and second surveys

The survey showed some positive changes between the first and second survey which appear to be as a direct result of the initiatives of the second cycle of Action Research.

- Parents showed an increased awareness of the importance and benefits of physical activity for young musicians.
- Parents showed an increased awareness that playing-related musculoskeletal disorders are preventable, and were more likely to seek the cause.
- Increased awareness of the physiotherapy service available to pupils
- Increased awareness that instrument teachers may not be the best person to consult about a playing-related musculoskeletal disorder
- parents are more knowledgeable about what to do if their child reports pain as a result of playing at the time of the second survey than at the time of the first survey.
- There was a decrease in the number of responses that indicated that parents didn't know what strategies were in place at the school, re injury prevention indicating that our communication to parents about injury prevention had been (at least partly) successful.
- There was an increase between the two surveys in the number of parents who felt confident that pupils' musculoskeletal health was being well looked after

5.5.3 Second Instrument Teacher Survey; Findings, Discussion and Implications

Between February and July 2016, (after the first survey and before the second) there had been communication about the five risk factors for injury targeted at the instrument teachers:

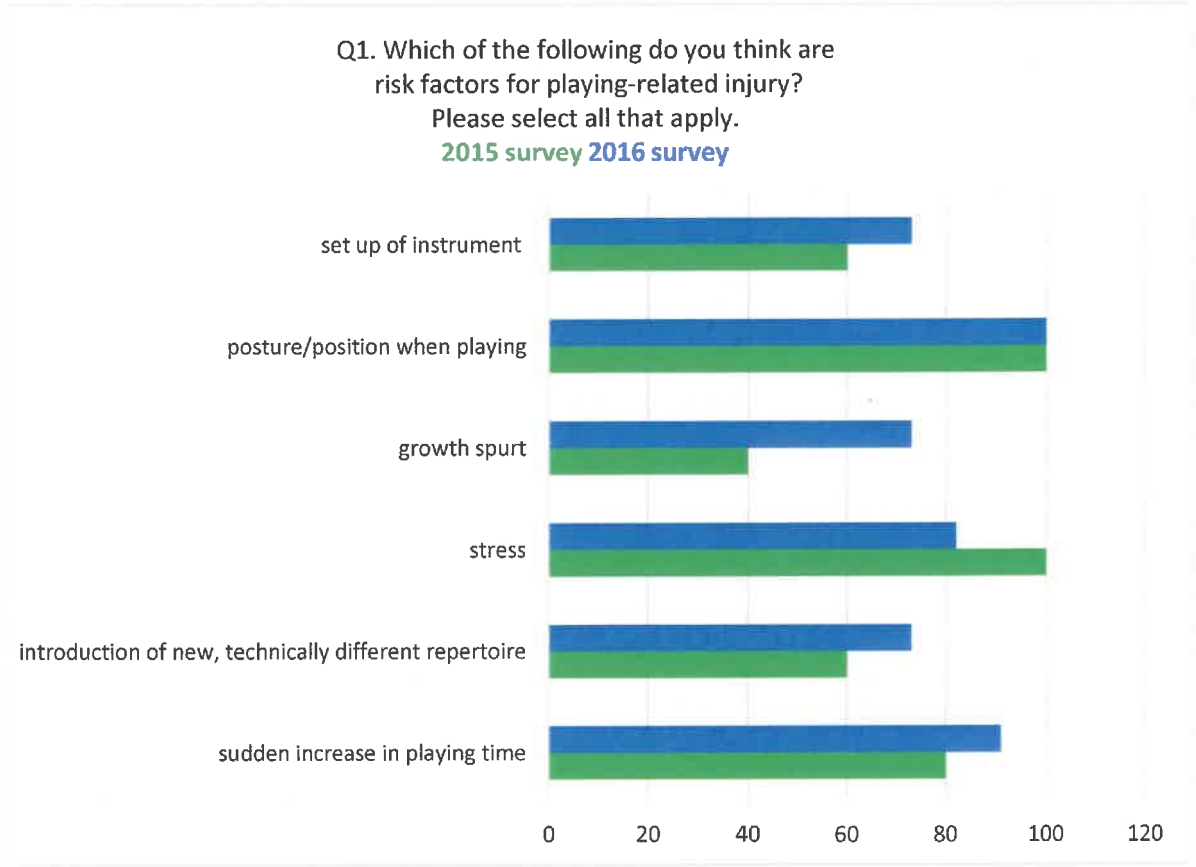
- their involvement in preparing pupils for the internal instrument assessments (section 5.4.1),
- the development of the playing-related injury prevention policy (5.4.2.3),
- inclusion of risk factors within safeguarding training (section 5.4.2.2).

In order to increase dependability (or reliability) in terms of the trustworthiness framework (3.2.6 and Fig 3.1) a copy of the survey that had originally been sent to the instrumental teachers in December 2015, was re-sent to instrument teachers on 26rd November 2016. The instrument teachers have remained broadly similar in personnel. Four responses were received in the first six days. A reminder was sent on 8th December. This prompted six more responses in the four subsequent days. There was one more response on 21st December 2016. The survey remained open until December 27th 2016 and had an eventual total of 11 responses.

This is a unit response rate of 16 per-cent for the second survey, compared to the unit response rate of ten per-cent for the first survey (4.7.9). This low response rate means that the responses cannot be generalised to the whole population of instrument teachers at the school, but they still provide genuine and interesting insights into these instrument teachers knowledge and thoughts. As with the 2015 survey the text-based answers were analysed by coding into thematic categories from the text. In the next section I will present the findings from each of the survey questions in graphical format, comparing responses from the surveys distributed in 2015 and in 2016. Selected exerts from the text-based data are used to illustrate or illuminate particular points.

5.5.3.1 Question 1: Knowledge of Risk Factors

Based on feedback from one of the instrument teachers during the pilot of the survey, the instrument teachers wanted to include 'set up of instrument' as a separate risk factor, which I had included within the category of 'posture/position when playing'. This meant that they instrument teachers had a list of six risk factors for injury in both surveys.



First Finding: Although the response rate was low, there was a definite trend towards more teachers knowing more risk factors in the 2016 survey than in the 2015 survey. Of the six risk factors listed, four were scored more highly in the 2016 survey than in the 2015 survey.

Implication: *The implication of this is that more was known by the instrument teachers about the risk factors for playing-related injuries at the time of the second survey than at the time of the first survey. This was after the implementation of two strategies that directly involved them.*

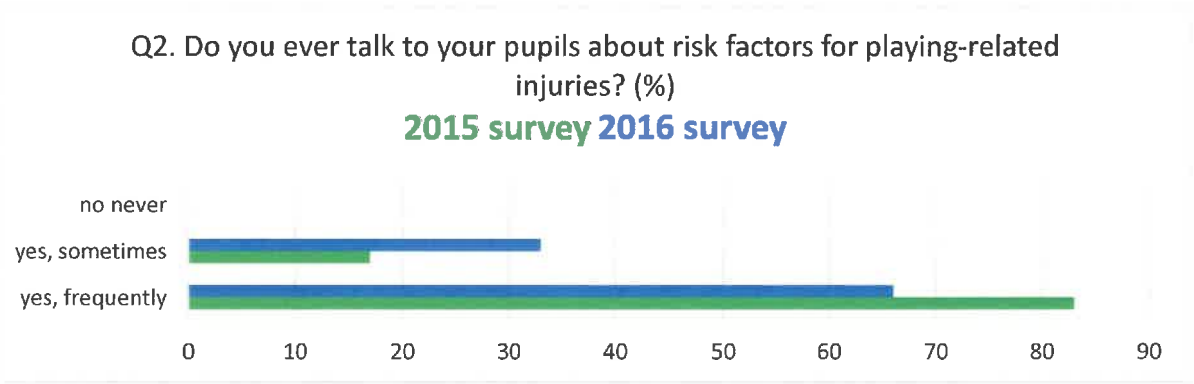
Second Finding: not all the instrument teachers knew all of the six risk factors for playing related injury.

Implication: *The implication of this is that despite the targeted inclusion of all instrument teachers, requiring then to prepare their pupils for the internal school instrument assessment, and requiring them to confirm that they had read and understood the information about risk factors for injury in relation to safeguarding, and considering that all of the risk factors were included in the options, although the demonstrated that they knew more than at*

the time of the first survey, these instrument teachers are unable to fully fulfil their obligations and responsibilities to the school either from a perspective of injury prevention and safeguarding, or in order to teach this information to the pupils in preparation for the instrument assessment. This is a disappointing result.

It is reasonable to presume that those instrument teachers who did not participate, are not better informed. This resonates with findings from literatures (Blackie et al., 1999; Chesky et al., 2006; Gaunt, 2010; Guptill, 2011; Norton, 2016; Norton et al., 2015;Spaulding, 1988) and the suggestion from the parents, that some form of CPD for the instrument teachers (section 6.7.1.5) could be used to help to fill this gap in their knowledge.

5.5.3.2 Question 2: Talking to Pupils about Risk Factors for Playing-related Musculoskeletal Disorders



Finding: The instrument teachers who responded to the survey in 2016 indicated that they are talking less frequently to their pupils about risk factors for playing related injuries than the respondents in 2015. Text Box 29 shows one of the text-based comments explaining why one teacher selected 'yes, sometimes' rather than 'yes, frequently':

- *I try to strike a balance between mentioning risk factors without over - emphasising possible risks in such a way that might become too 'suggestive' of aches and pains which might materialise.*

Text Box 29 Example of Instrument Teacher inhabiting Middle Ground

This is entirely pragmatic and practical approach of trying to inhabit middle ground between raising awareness but not generating alarm.

The responses were supplemented and supported by additional comments from two different teachers demonstrating willingness to address posture related issues. These are shown below in text Box 30.

- *I think it is very important for teachers to monitor the physical posture and movements of their students constantly especially during the development stage, and according to their physical makeup as each student is different. Also to be flexible about practise methods according to the students' shape and size, how to overcome their technical difficulties for example.*
- *Exercises to improve posture, balance and movement figure prominently in my lessons.*

Text Box 30 Instrument Teachers willingness to address posture related issues

Implication: *These comments imply thoughtful, practical and caring approaches to the way these instrument teachers talk to their pupils about risk factors for playing-related injuries, even though they don't know what the risk factor are.*

5.5.3.3 Question 3: What more could the school be doing?

Eight of the eleven instrument teachers provided text-based answers to this open question.

First Finding: three of these eight answers, shown in Text Box 31, suggested something to do with increased provision for fitness, relaxation or posture work:

- *More for General fitness and relaxation*
- *More practices for relaxation and general fitness, e.g. yoga and swimming*
- *Yes. Obligatory posture and fitness training.*
  Collaboration between musicians and physical specialists.

Text Box 31 Instrument Teachers Suggestions of more fitness based activities

This mirrors and reinforces comments that emerged from the Boarding House Staff and Practise Supervisors Focus Group Meetings (4.6), and the second parents survey (5.5.2) recognising that these factors are helpful for young musicians, and acknowledging that provision within the school could be increased.

Implication: *The implication is that there is an awareness the of relevance and benefit to musicians of physical activity and fitness training.*

The call for increased provision for fitness activities has been a recurring theme whenever opinions of stakeholders has been sought. It first emerged during the scoping work in the winter of 2012-2013, from the health questionnaire to pupils (4.1.3), *and then again in the first cycle of Action Research, from the focus group meetings with the boarding house staff and the practice supervisors* (4.6).

Second Finding: There were a variety of suggestions about activities or strategies to increase awareness of risk factors for injury. They are shown in Text Box 32:

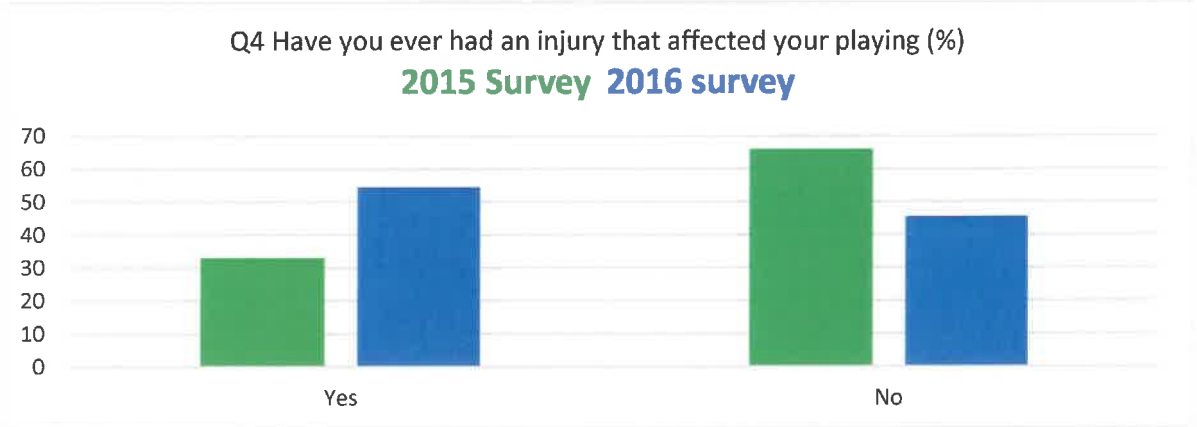
- *If they are common, then the occasional lecture/workshop.....*
- *A strategy that engages the pupils' interest more. Young performers can believe they are invincible and shrug-off the advice.*
- *Keeping pupils aware which is what we are doing.*
- *It would help when academic and musical pressures do not come at the same time. Difficult to schedule.*
- *Awareness has improved hugely in recent years. All students to see school Physio at start of year. Introduction of more teacher/Physio interactive sessions, EMG, as many talks as time permits from school Physio.*

Text Box 32 Suggestions from Instrument Teachers of strategies to increase awareness of risk factors for injury

This also mirrors and reinforces comments that emerged from the Boarding House Staff and Practise Supervisors Focus Group Meetings (4.6), recognising that more injury-prevention awareness strategies could be implemented in the school. One of the teachers suggested the introduction of more instrument teacher /physiotherapy interactive sessions, and as many talks 'as time permits', from the school physiotherapist:

Implication: *The implication is that the instrument teachers that responded to this question are ready for a more dynamic and interactive approach. These comments are all helpful and are suggestions that would work towards increasing awareness amongst pupils of risk factors for injury.*

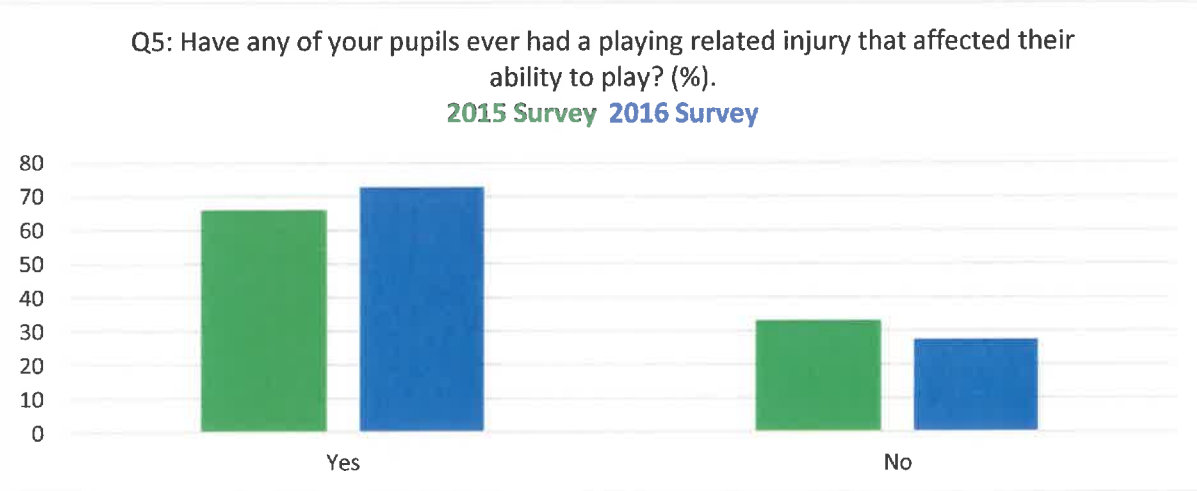
5.5.3.4 Question 4: Have you ever had an injury that affected your playing?



Finding: 54.5 per-cent of the instrument teachers who responded to the survey in 2016 reported that they had an injury that had affected their playing. This figure is higher than the responses in 2015 (33.5 per-cent), and falls within the industry norm for professional orchestral musicians and conservatoire students (2.2.2), and lower than the incidence amongst pupils at the School (4.1.1).

Implication: *The figure aligns with findings from the literature* (2.2.2) *and implies that the visiting music teachers who responded to this question have an 'industry normal' incidence of playing related injuries themselves.*

5.5.3.5 Question 5: Incidence of Playing-related Musculoskeletal Disorders in Pupils



Finding: The reported incidence of playing-related injuries in pupils is 72.7 per-cent. This correlates with the 78 per-cent incidence reported by parents (5.5.1.2), the instrument teachers survey (5.5.3.5) the pupil survey (5.5.5.2) and the audits (4.1.1, 5.5.8), and aligns with findings in the literature about 'industry normal' incidence of injury in pre-conservatoire age instrumentalists (Ackermann & Driscoll, 2013; Britsch, 2005; Fry, 1988; Fry & Rowley, 1989; Lockwood, 1988; Ranelli et al., 2008; Ranelli et al., 2011; Shoup, 1995; Vinci et al., 2015). This not only confirms the extent of the problem, but also by framing the findings within this literature, the credibility of the project in terms of the trustworthiness framework (3.2.6 and Table 3.1) is supported.

That parents and instrument teachers within this setting are not actively seeking ways to address this, and seem content that this an acceptable risk was also found by Ackermann & Driscoll (2013). It hints at the entrenched mindset that I am seeking to change.

Implication and Discussion point: *The reported higher incidence of playing related injuries amongst pupils than amongst the instrument teachers themselves is particularly interesting and, for me, raises obvious questions.*

As a physiotherapist and as a parent, and knowing that the majority of playing-related injuries in the pupils are preventable, the whole issue of such a high incidence of playing related injuries in pupils is deeply shocking, and my belief is that this is not acceptable.

Why are the instrument teachers apparently not as concerned as I am?

Is this acceptable to the instrument teachers?

It seems that the tradition of western classical instrumental music education is steeped in an acceptance that playing related pain and/or injury is 'normal', is 'all part of the job description'. This is accompanied by a tradition of secrecy about injuries and a reluctance to discuss injuries openly.

This level of acceptance goes some way to explaining the extreme reluctance of the instrument teachers, and to a lesser extent the HODs to engage with this topic, and the extreme resistance to change that I have encountered during this project.

The culture of acceptance that playing-related injuries are normal whilst maintaining a level of secrecy about injuries, seems to me to be a particularly toxic and dangerous

combination of beliefs and behaviours, which inevitably make it difficult for musicians to seek help in the earliest stages of an injury. Young musicians are particularly vulnerable because they emulate the behaviour of their role models. Instrument teachers are ideally placed to provide information about risk factors, to encourage their pupils not to take risks, and to be open about playing-related injuries, and to encourage them to seek assessment and treatment at the earliest opportunity for any injuries that might occur.

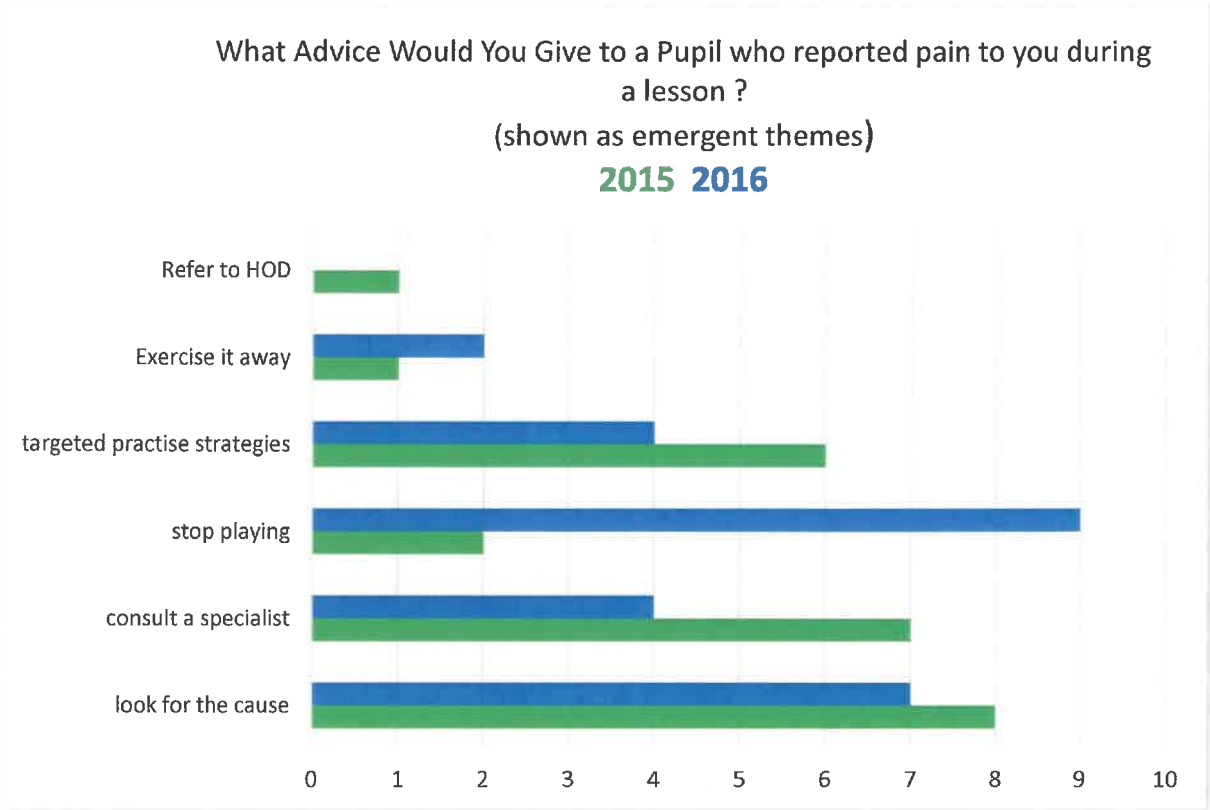
5.5.3.6 Question 6: Advice Given to Pupils

This question provided a text box and encouraged open replies. All eleven respondents provided an answer. The responses were analysed and coded into themes, which have been ranked by number of responses. Some of the answers contained several components and included themes which placed them into multiple categories. The themes that emerged are shown in Table 5.5.

Table 5.5 The themes emerging from Question 6 of the Instrument Teachers Survey (2016): What advice would you give to a pupil who reported pain to you during a lesson?

Rank	Theme	Number of Responses
1.	Stop Playing	9
2.	Try to establish the cause	7
3.	Consult a Specialist (including the school Physiotherapist)	4
	Use targeted practice strategies	4
4.	Try and exercise it away.	2

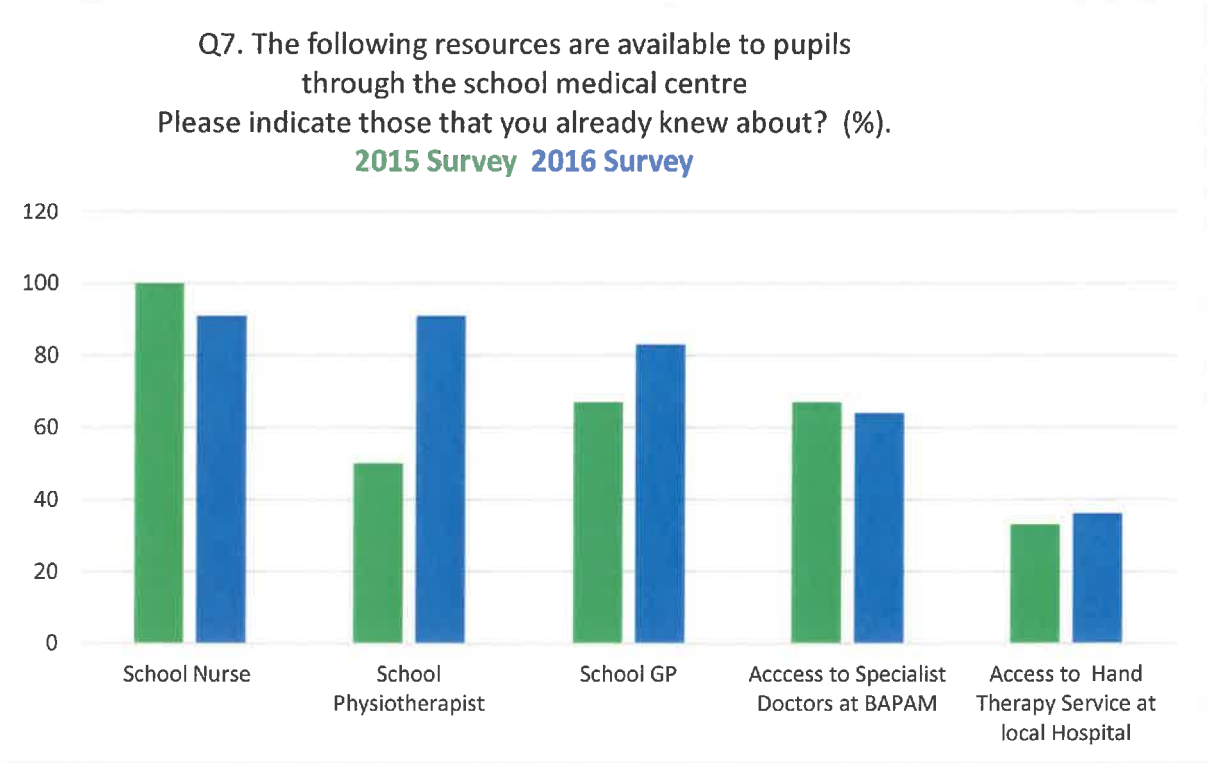
The responses from the instrument teachers survey in 2016 were then compared with the responses from the instrument teachers survey in 2015 and are presented as a graph.



Findings: This question provoked some marked changes in the answers provided between the first survey in 2015 and the second in 2016. In 2015, the highest ranked response was 'try to work out the cause'. This fell to second place in the 2016 survey, behind 'stop playing', which had nine out of eleven responses in the 2016 survey, compared with only two responses in the 2015 survey. The most significant difference was a marked increase (nine out of eleven respondents from the 2016 survey compared with two out of six respondents in the 2015 survey) in the number of instrument teachers advising the pupils to stop playing if they reported pain. This is exactly the right advice to give, and indicates an increase in instrument teachers realising that to continue playing with pain can make injuries worse. It might hint at a shift away from the 'show must go on' mindset that historically, is common amongst performing artists.

Implication: *The implication of this is that the message that playing with pain is not good and should be discouraged, has had a positive impact on the instrument teachers that responded to this survey.*

5.5.3.7 Question 7: Awareness of services available through the school



First Finding: Not all the instrument teachers who responded, knew about all of the services available through the school medical centre.

Discussion: There may be a reasonable argument that instrument teachers do not need to know what services are available through the school centre, however, I think that if instrument teachers take their role of being proactive in injury prevention seriously, then there is a natural and logical next step that they should be aware of what help is available if a pupil does get injured.

Implication: *The implication is that the school medical centre could be more proactive in publicising the services available through it, to the instrument teachers. At present, information about the school medical centre is freely available on the school website within the parent handbook and the pupil handbook, but instrument teachers are not required to look at these. The medical centre could send information about its services directly to the visiting instrument teachers: this could be sent to each teacher either via a hard copy delivered to their pigeon hole in the school staff room, and via an email.*

Second Finding: The responses show remarkable consistency between the two surveys, in the instrument teachers knowledge of the school nurse, access to specialist doctors

at BAPAM and access to specialist hand therapists at the local hospital. However, there is slight increase in the number of instrument teachers aware of the school GP and a marked increase in the number of instrument teachers who are aware of my service as the school physiotherapist.

Implication: *This increased awareness of the physiotherapist at the school implies that the direct contact that I have had with instrument teachers during the second cycle of action research via sending emails directly to them, introducing myself and inviting them to participate in the survey. I have also liaised directly with instrument teachers about specific pupils and have gone into instrument lessons from time to time. These measures seem to have increased their awareness of me.*

5.5.4 Summary

The response rate to the second instrument teachers survey was 16 per-cent. This is still very low, but higher than the 10 per-cent response rate to the first survey, but the responses cannot be assumed to be representative of the views or knowledge of the other instrument teachers.

Responses that were broadly similar to the first survey were that

- The instrument teachers reported that pupils had an incidence of playing-related musculoskeletal disorders that aligns with the parents report and with industry norms (5.5.3.5).
- The instrument teachers did not know about the services available to pupils although the school health centre, although more indicated that they knew about physiotherapy (5.5.3.7).

The changes between the first and second survey are that:

- not all the instrument teachers knew all of the six risk factors for playing related injury, although there was definite trend towards more teachers knowing more risk factors in the 2016 survey than in the 2015 survey (5.5.3.1).
- Instrument teachers indicated that they are aware of and willing to address postural issues (5.5.3.6).
- The instrument teachers indicated that they wanted the pupils to have more provision for fitness, relaxation and posture work.

- The instrument teachers had suggestions for activities or strategies to help increase awareness of risk factors for injuries.
- There was a significant increase in the instrument teachers saying that they would advise pupils who reported playing related pain, to stop playing, compared to the first instrument teachers survey (5.5.3.6).

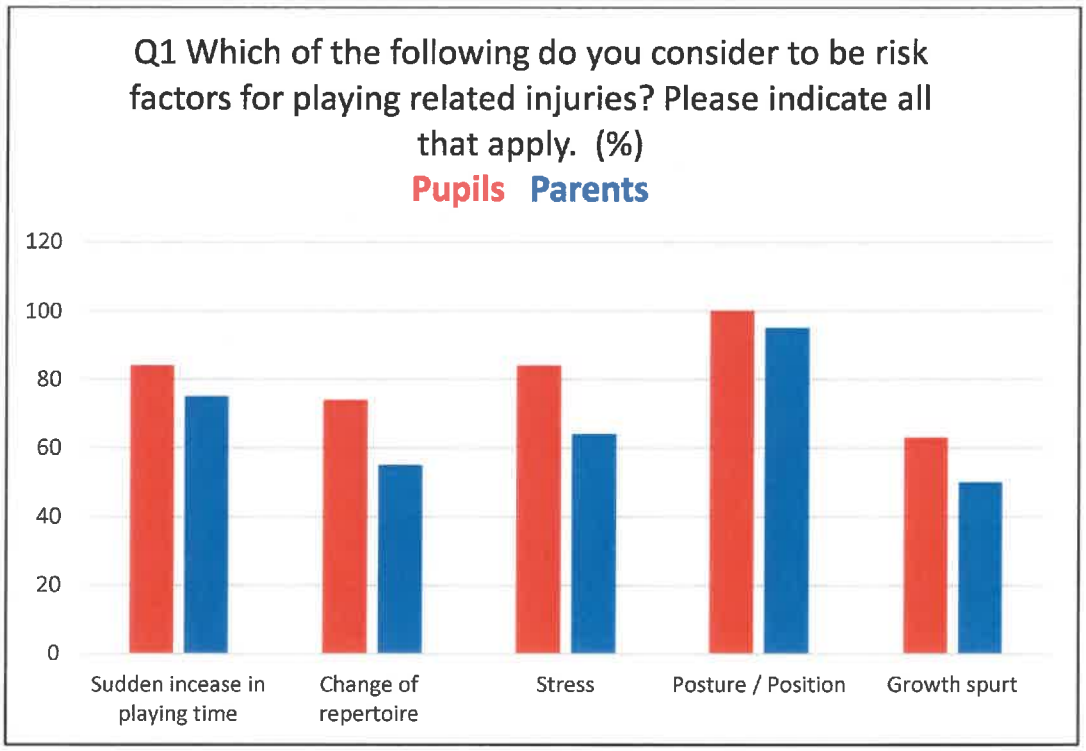
5.5.5 Pupil Survey: Findings, Discussion and Implications

Two groups of pupil had voluntarily contributed to the focus group meetings in 2015 and, following the second cycle of Action Research I wanted to broaden the contribution from the pupils and offer the entire student body the chance to participate. The pupil survey comprised four of the five questions used in the parents' survey. It aimed to find out if pupils knew about the five risk factors for playing-related injuries, if they had experienced playing-related pain severe enough to affect their playing, if they knew what help was available through the school medical centre, and if they thought the school could be doing more to work towards injury prevention. Through the school email system, the pupils were sent an email explaining what I was doing, inviting them to participate in the survey, assuring them that participation was voluntary and that that responses were anonymised, and a link to the survey, on 8th December 2016. The boarding house parents were sent an explanatory email about the survey, in case any pupils wanted to ask them about it. The boarding house parents were also asked to remind their pupils about the survey.

This approach yielded eighteen responses in the first three days, and three more responses over the subsequent three days. The survey was closed on 21st December 2016. There were a total of 21 responses, representing a very low unit response rate of 11.6 per-cent and so the responses cannot be taken as representative thoughts, knowledge or opinions of the whole pupil body.

In the next section the findings from each question will be presented graphically and compared with the responses from the 2016 Parent Survey.

5.5.5.1 Question 1: Knowledge of Risk Factors for Playing-related Injuries.

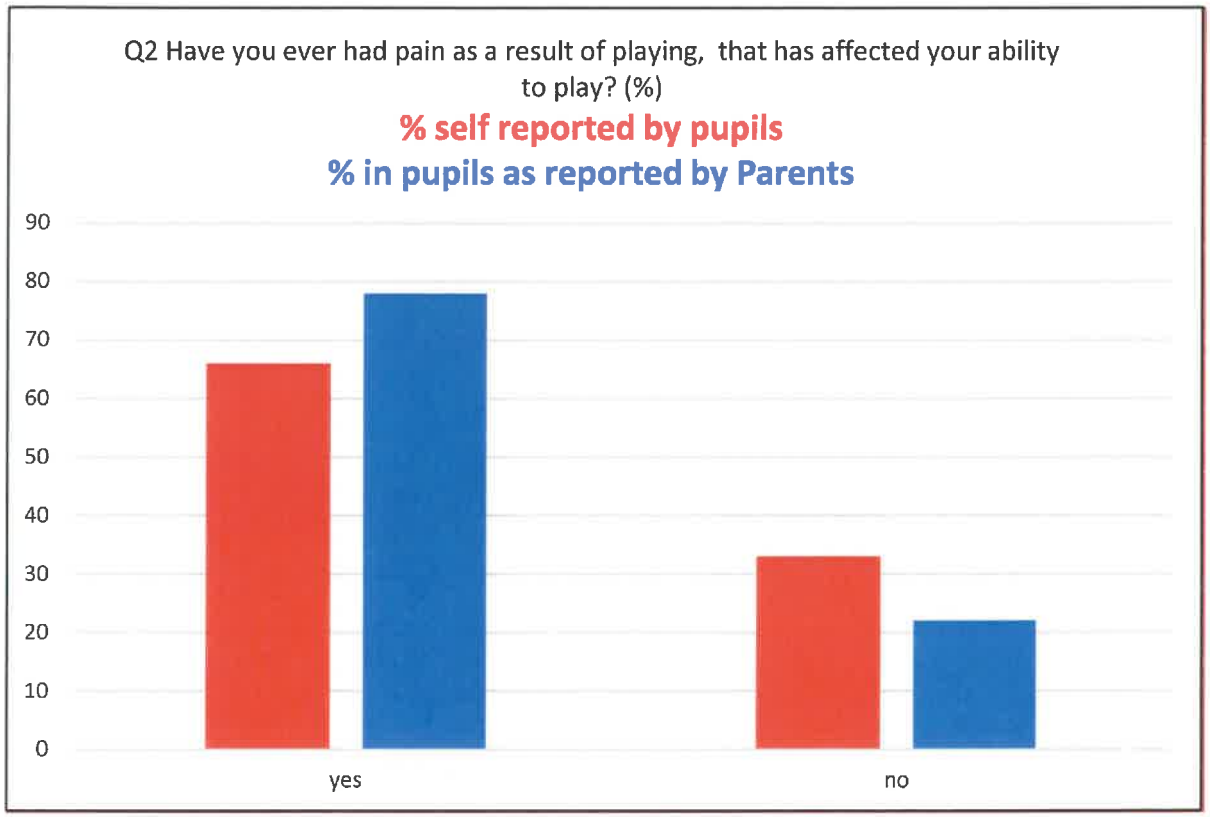


Finding: Despite the activities implemented during the second round of Action Research, which were directly aimed at and directly involved pupils (4.4.1, 5.4.3), the pupils did not know all five risk factors for playing related injuries by the end of the second cycle of Action Research, although they did consistently know more than the parents.

Implication: *Despite the two strands of the second round of action research, which were aimed at the pupils (the health promotion activities, and the inclusion of this within the instrument assessment process) not all pupils know all the risk factors. This demonstrates the extent and depth of the resistance to this initiative and implies that these strategies have not been wholly successful in ensuring that all pupils know all risk factors.*

5.5.5.2 Question 2: Reported Incidence of Playing-related Pain

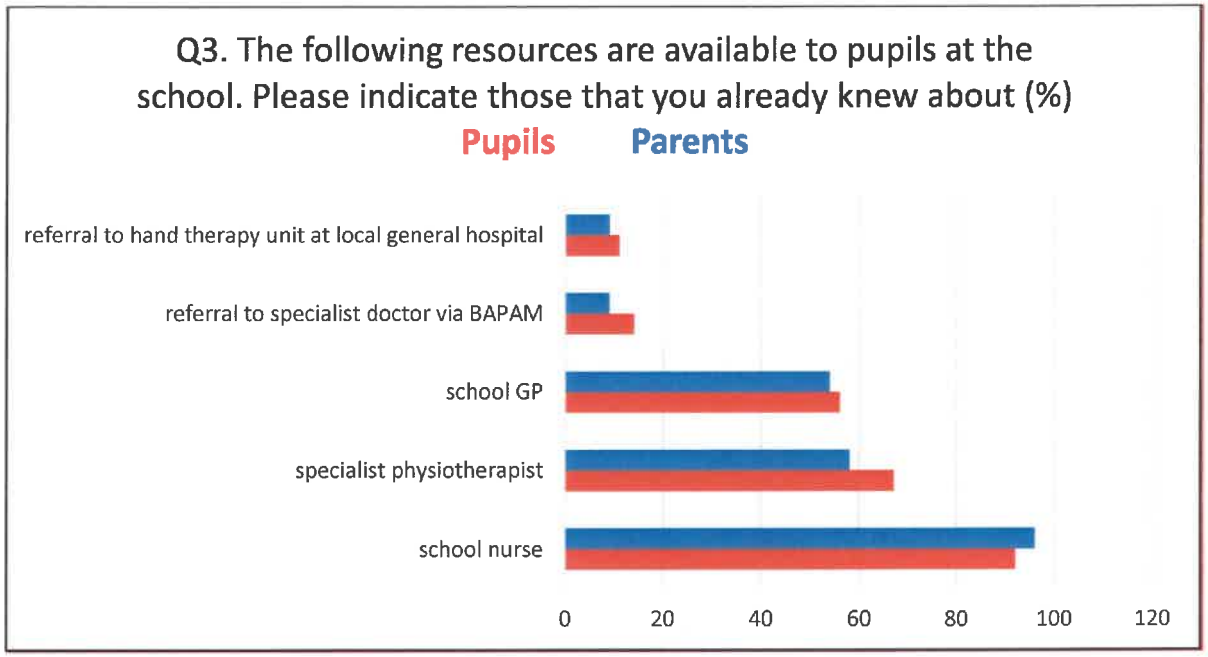
This question offered a closed choice between YES and NO as responses



Finding: 66 per-cent of the pupils reported that they had experienced pain as a result of playing, that has affected their ability to play. This is lower than the 78 percent reported by the parents. However, it still aligns with figures reported in the literature (2.2.2) amongst professional orchestral musicians, conservatoire level instrumental students and pre-conservatoire age music students.

Implication: *This indicates a reported incidence that falls within the industry norm. However, as the majority of playing-related injuries are preventable, I maintain that this figure remains unacceptably high for incidence of playing-related pain amongst children, and that work towards reducing this figure must continue.*

5.5.5.3 Question 3: Awareness of Services Available through the School



First Finding: There is little difference in awareness of the presence of the school nurse (90 per-cent of pupils and 92 per-cent of parents) and the school GP (55 per-cent of pupils and 56 per-cent of parents).

Implication: *I assume that this is because these services are the ones most commonly accessed by the pupils, and the parents are more likely to know either because their child has reported to them when they have had direct contact with the nurse or GP, or the parent has had direct contact with the school nurse.*

Second Finding: More pupils than parents knew about the physiotherapy service (75 per-cent of pupils and 67 per-cent of parents), the possibility of referral to specialist doctors at BAPAM (30 per-cent of pupils and 13 per-cent of parents) and the possibility of referral to specialist hand therapy unit at the local district general hospital (35 per-cent of pupils and 11 per-cent of parents).

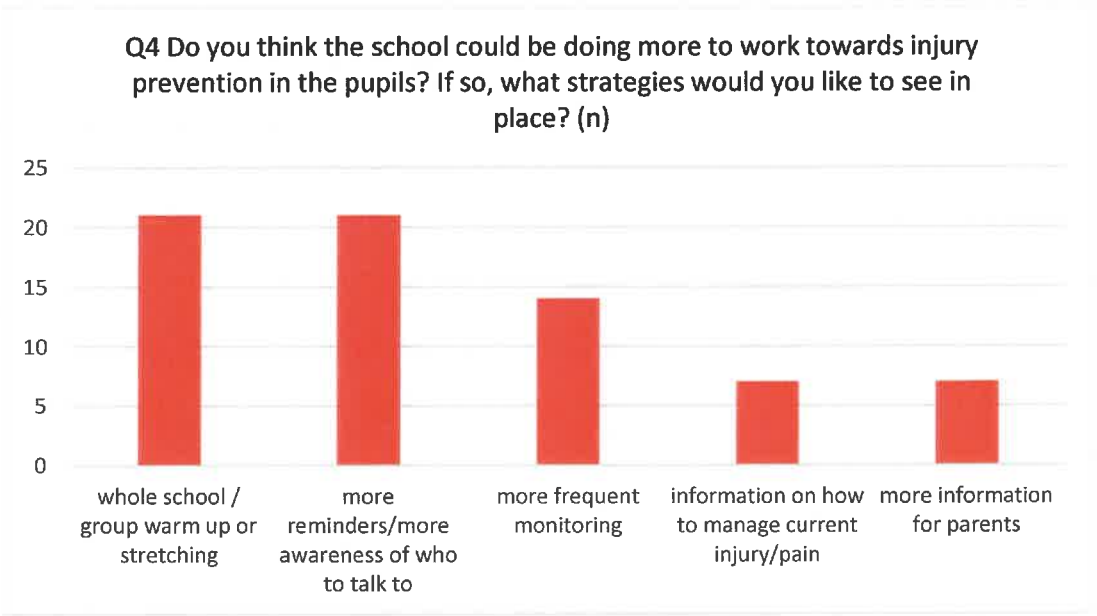
Implication: *This may be because they might not have needed these services themselves but know of one of their friends or peers accessing these services.*

Third Finding: Not all the parents and pupils know about the school nurse, the school GP or the physiotherapy service available at no cost through the school medical centre,

Implication: *The implication is that the medical centre needs to promote its services more effectively to parents and pupils (and also to instrument teachers). This could take the form of direct 'marketing' including using postcards, an email 'mailshot', an article in the school weekly bulletin, an article on the news page of the school website and a medical centre page on the school website.*

5.5.5.4 Question 4: What more could the school be doing?

This question provided a text box for open answers. The responses were collated and analysed using codes that emerged from the text data.



First Finding: Some pupils suggested a whole school or group warm up or stretching session. An example of a comment from one of the pupils about the potential benefit of 'whole school / group warm up or stretching' is shown in Text Box 33 below:

> *I would recommend to have a full stretching session for the whole of the school before EMP (early morning practice), led by Mrs. Upjohn / practice supervisors / boarding house staff, as it would dramatically raise awareness to these prevalent issues. Also regular lectures from players in the profession on injury prevention would be a stimulating and interesting approach; I myself would highly recommend both* [redacted] *and* [redacted] *from Trinity Laban.*

Text Box 33 Example of a pupils recommendation of 'whole school' stretches

Implication: *This implies an awareness that regular, daily group stretching activities would be beneficial because it would normalise them and make them habitual. This excerpt also shows that the pupil has a willingness to embrace a change, suggesting people who might be interesting as speakers to the pupils.*

Second Finding: The next category was 'more reminders or more awareness of who to talk to' and in Text Box 34 there are two examples of pupil comments about this:

- *There is a lot of stress put on making this a fun issue for the pupils, in the hope that they will take it in and remember it; however, sometimes I feel this approach undermines the seriousness of the issue and pupils don't take the topic with the humbleness, maturity and sense of importance it deserves. Perhaps a mixture of approaches and more constant reminders would be helpful.*
- *I think that there should be more awareness on who to talk to or go to see to prevent the pain or eeze it.*

Text Box 34 Suggestions from Pupils

The comments from these two pupils indicate that they have an appreciation of the importance (and even perhaps gravity) of this topic and that they feel that more reminders and more information would be helpful.

Implication: *The implication of this is that some pupils are taking this topic seriously.*

Third Finding: The next category was 'more frequent monitoring'. That this was raised indicates that these pupils are aware that risk of injury is an issue. Examples of comments are shown in Text Box 35:

- *I think that they should have maybe monthly check-ups on people, because there are many people (including myself) who think that many pains are normal. This has happened to me, and I only went to the nurse when it was really bad, and because my mum saw me struggling.*
- *Educating parents more and monitoring pressure put on pupils to play by music teachers and parents*

Text Box 35 Indication of awareness of risk for playing-related injury

Implication: *The first comment highlights the issue that some musicians think that playing with pain is normal (Lockwood, 1988; Shoup, 1995; Ackermann & Driscoll, 2013). The second gives a glimpse into the pressure that this pupil feels from music teachers and*

parents. That the pupil suggests more education for the parents indicates perhaps that this pupil is under particular pressure from his/her parents to play. It is a request for help.

5.5.6 Summary

The response rate from the pupils was low at 11.6 per-cent

Key findings

- The pupils did not know all five risk factors for playing related injuries by the end of the second cycle of Action Research, although they did consistently know more than the parents (5.5.5.1).
- The incidence of playing related injuries align with figures reported in the literature (2.2.2) amongst professional orchestral musicians, conservatoire level instrumental students and pre-conservatoire age music students (5.5.5.2).
- More pupils than parents knew about the physiotherapy service (75 per-cent of pupils and 67 per-cent of parents), the possibility of referral to specialist doctors at BAPAM (30 per-cent of pupils and 13 per-cent of parents) and the possibility of referral to specialist hand therapy unit at the local district general hospital (35 per-cent of pupils and 11 per-cent of parents) (5.5.5.3).
- Not all the pupils knew about the school nurse, the school GP or the physiotherapy service available at no cost through the school medical centre (5.5.5.3),
- Some pupils suggested a whole school or group warm up or stretching session (5.5.5.4).
- Some pupil suggested that there be 'more reminders or more awareness of who to talk to' (5.5.5.4)
- Pupils suggested ore monitoring of them and of the pressures put on them (5.5.5.4)

It was useful to compare responses from the parents survey and the pupil survey, if only to explore how 'in touch' the parents are with their children in the context of it being a specialist music boarding school. It also indicated that, after health promotion activities that were targeted directly at them, the pupils were more aware of the risk factors for playing related injuries than their parents.

5.5.7 Survey to HODs: Findings, Comments and Implications

A survey was sent to four of the music HODs on 9th December 2016. I selected the HODs of strings, keyboard, woodwind and brass & percussion, and omitted the head of the composition department and the head of the jazz department, because western classical instrumental players are the focus of this study. An email was sent from my school email address directly to them, explaining what I was doing, inviting them to participate in the survey, and assuring them of the anonymity of their responses. The email provided them with a direct link to the survey which had four questions. The response rate was zero.

Comment and Implication: *There is no data to analyse and make implications or inference from. However, it seems important to reflect on why this zero-response rate might have occurred. The link to the survey was sent on December 9th 2016, which fell five days before the end of the Autumn term. This is without question an extremely busy time of the school year, with preparations and rehearsals for the school Christmas concert in full swing. Additionally, staff are always tired by this point in the school term. These two factors may well have contributed to the non-response result, but it is hard not to also consider that it reflects a lack of 'buy in', with the issue of playing-related injuries, with my project and with me. I have genuine concerns that this could make it impossible to maintain and develop engagement with this issue, from the HODs.*

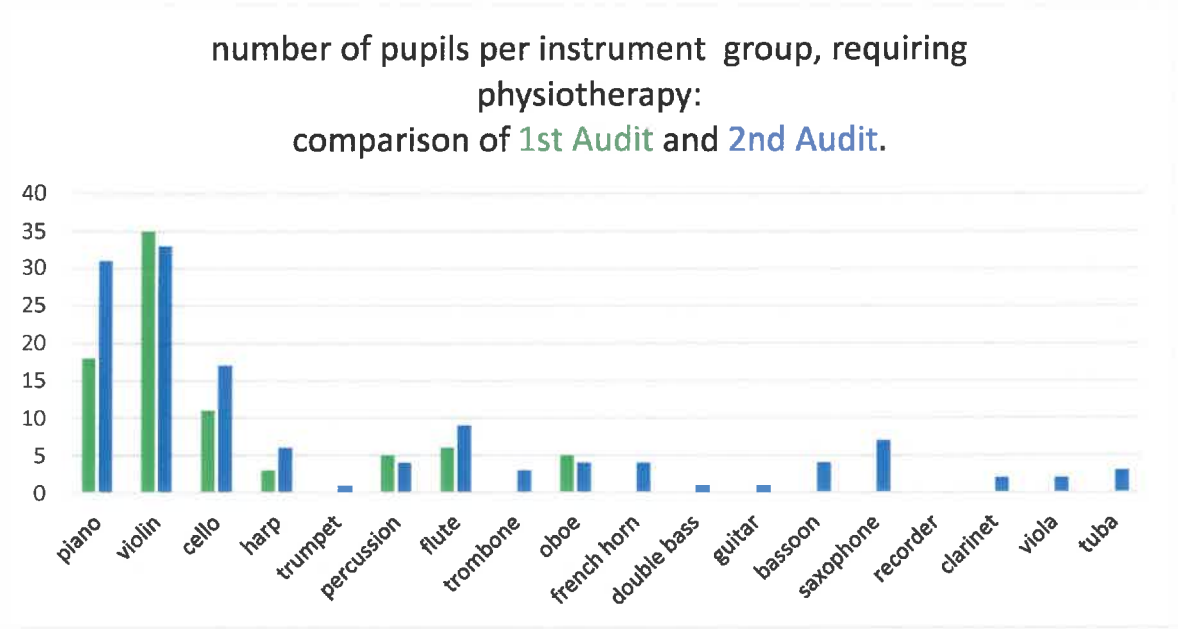
5.5.8 Second Audit (Physiotherapy treatment records between September 2013 and April 2017): Major Findings, Discussion and Implications

Throughout the EdD, I maintained my work as the clinical physiotherapist at the school. This meant that I was available each week to see a list of pupils who required physiotherapy assessment and treatment of playing-related injuries. Pupils either referred themselves to me, or were referred to me via the school nurse, instrument teachers or the boarding house staff.

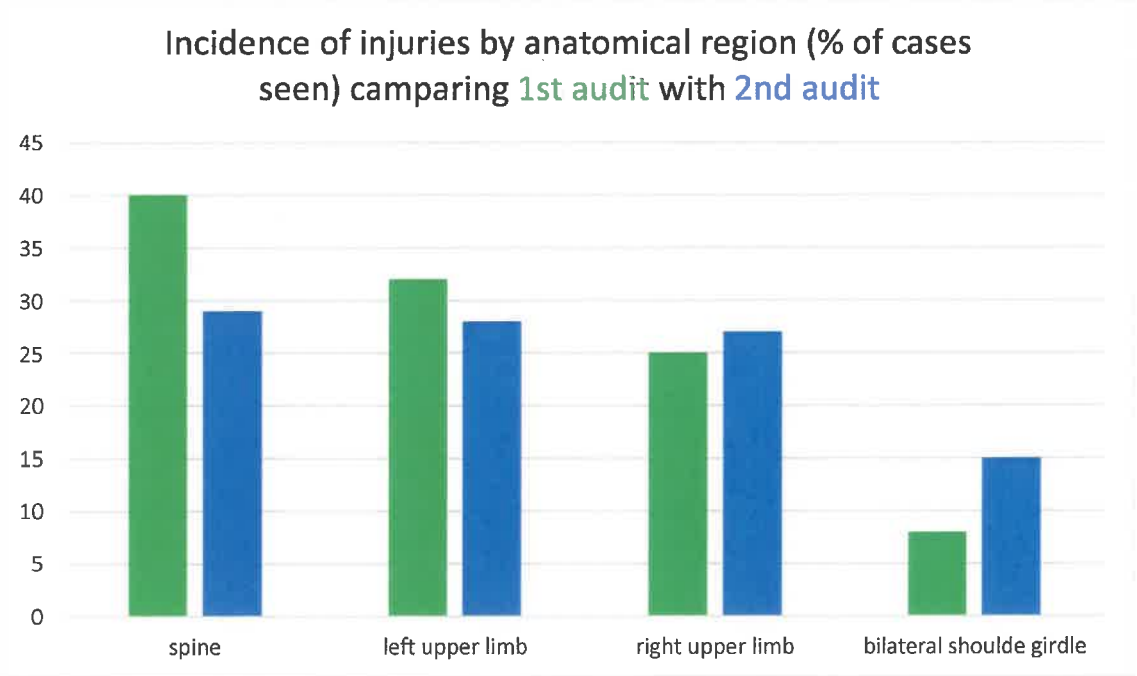
In this section I present the findings of a second audit of physiotherapy treatment records. These were treatment notes between September 2013 and April 2017.

The audit looked at three specific pieces of information: the incidence of contact with the physiotherapist per instrument group, the incidence of injuries by anatomical region (i.e where the injury was occuring) and whether the injury was acute, chronic or recurrent. The results are compared with the results from the first audit (4.1.1). Between the end of the first audit and the end of the second audit, two cycles of Action Research were completed and a number of targeted health promotion initiatives had been implemented (5.4.1, 5.4.2, 5.4.3).

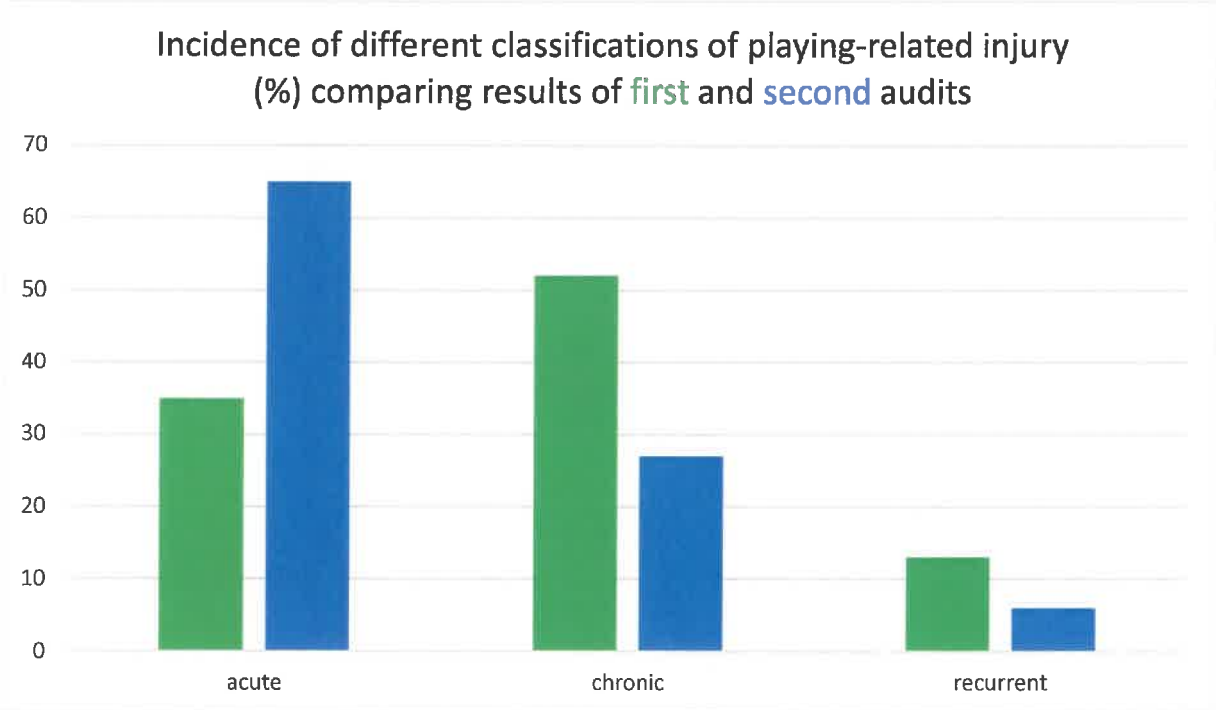
The findings are presented graphically comparing data from the two audits. The first graph illustrate the numbers of pupils in each instrument group seeking physiotherapy.



The next graph illustrates the injuries by anatomical region, comparing data from the two audits.



The third graph illustrates the classification of each injury into acute, chronic or recurrent injuries.



However, the nature of the injuries had changed significantly: in the second audit, more acute injuries and fewer chronic and recurrent injuries were seen.

The increase in incidence, and the change in the nature of the injuries seen, with a marked increase in acute injuries,

First Finding: There has been an increase in the numbers of instrumentalists from each group seeking physiotherapy appointments between the period of the two audits. The greatest numbers of referrals in both audits are from pianists, violinists, cellists, harpists, percussionists and flautists.

Implication: *More pupils are seeking physiotherapy appointments. This can interpreted in several ways. The most obvious first interpretation is that more pupils are getting hurt. However, I don't think that this is the case. I suspect that an increased awareness, amongst parents and instrument teachers, of the availalbility of physiotherapy at the school, brought about my increased communiccaton directly from me to these two key stakeholder groups, has contributed to the number of referrals.*

Second Finding: The overall trend in which anatomical area was treated has not changed, with the spine being the highest reported area for pain or injury and the shoulder

girdle being the lowest across both audits. So although the numbers of referrals to physiotherapy have increased, the patterns of which body part is being injured has not changed significantly.

Implication: *The implication of this is that the sites of the injuries are consistent. This is unsurprising as the demand placed on the body by the various instrument have not changed.*

Third Finding: For the purposes of this work I have classified injuries as follows:

- **acute** if they started within the previous two weeks.
  acute soft tissue injuries typically, come on suddenly and worsen rapidly.
- **chronic** if they have been ongoing for longer than six weeks
- **recurrent** if an injury has settled completely and then recurs.

There is a distinct change in the nature of the injuries that were seen for physiotherapy between the first audit and the second audit. The second audit shows a marked rise in the number of acute injuries and a marked fall in the number of chronic injuries, with a smaller, but still significant fall in the number of recurrent injuries.

Implication: *The rise in the number of acute injuries seen, indicates a distinct and measurable shift towards pupils getting help with injuries sooner, and implies that these pupils understand the benefit of seeking help for injuries as soon as possible. This may be a result of more parents and instrument teachers knowing that a physiotherapy service is available to the pupils, and it may indicate an increased awareness that untreated acute injuries are more likely to become chronic injuries which are more resistant to treatment, so seeking treatment early is hugely beneficial. Additionally, without evaluation and treatment, even if acute injuries settle in the short term, without understanding the mechanism behind the occurrence of the injury, and subsequently making relevant changes to address the risk factor, recurrence of the injury is almost inevitable.*

The rise overall in number of pupils across all instrument groups seeking physiotherapy for playing related injuries may also be explained by this phenomenon: more pupils know about the physiotherapy service via their parents and teachers and are seeking physiotherapy advice early. It is likely that the fall in the number of chronic and recurrent injuries is a direct result of the increase in numbers of acute injuries being treated.

5.6 Statement of Key Findings from the Second Cycle of Action Research

Response rates were low from the instrument teachers and the pupils, but were significantly higher from the parents, compared with the parent survey at the end of the first cycle of Action Research. The HODs did not respond at all.

The key findings from the second cycle of Action Research are that:

The parents, the instrument teachers and the pupils

- did not all know the five risk factors for playing-related injuries (5.5.1.1, 5.5.3.1, 5.5.5.1),
- and did not know about all the resources available through the school to help manage playing-related injuries, although after the second cycle of Action Research more knew about the physiotherapy service (5.5.1.4, 5.5.3.7, 5.5.5.3).

The parents and instrument teachers

- reported an unchanged incidence of playing-related injuries between the first and second survey (5.5.1.2, 5.5.3.5),
- and they indicated that they were aware of the benefits of increased physical activity, and felt the pupils could be doing more physical activity (5.5.1.5, 5.5.5.4).

The parents

- indicated that they were not assuming that playing-related pain was inevitable and were actively trying to problem solve (5.5.1.3),
- were confident that the school was communicating well with them and doing enough about the issue of injury prevention (5.5.1.5).
- And they indicated that they felt CPD for instrument teachers would be beneficial (5.5.1.5).

The instrument teachers

- were advising the pupils to stop if they had pain while playing (5.5.3.6)

- revealed that the actual incidence of referrals to physiotherapy at the school increased slightly, but there was a distinct change in nature of injuries, with more acute injuries and fewer chronic and recurrent injuries (5.5.8).

5.7 Un-anticipated Consequences of the Second Cycle of Action Research

Perhaps the most surprising outcome for me, of the entire Action Research process has been the entirely un-anticipated and unplanned impact that the project has had. This has extended way beyond the scope and setting of the original research design. In this section I will introduce the wider and entirely unplanned impact that this study has had across a number of areas.

5.7.1 Raising Awareness, beyond the School, of Risk Factors for Playing-related Injuries in a Pre-Conservatoire Setting

Over the course of the second cycle of Action Research, I was invited to give number of talk about my Action Research project and my findings, to organisations whose membership is directly involved in the education of young instrumentalists (BAPAM, the Musicians Union, the Music Masters and Mistresses Association - whose membership works mainly in the UK private school sector, the English State Education County Music Hubs, and the International Chamber Music Summer School) By giving talks to these groups I have increased awareness of risk factors for playing-related injuries in a pre-conservatoire setting, and have generated significant interest, with one talk often leading to an invitation for another. These organisations know about my work either because of my direct involvement with them (BAPAM), as a result of my contacting them as part of the second cycle of Action Research (MU) or through word of mouth (MMA, County Music Hubs, International Chamber Music Summer School). A list of talks that I have given is found within Appendix A.

5.7.2 Inclusion of Playing-related Injury Prevention within the Safeguarding Module of the Trinity College, London, Certificate for Music Educators

Instrumental Music Teaching in the UK is currently largely unregulated, with no statutory requirement for any sort of teaching qualification. Most musicians describe themselves as lifelong learners but refer to technical learning on their instrument rather than anything else (Smilde, 2005; Smilde, 2009). In 2012, the Government launched its National

Plan for Music, and called for a new non-mandatory qualification aimed at recognising the work of music educators and providing them with opportunities to develop their practice. As a direct result, both the Associated Board of the Royal Schools of Music (ABRSM) and Trinity College, London Exam Board have introduced a Certificate for Music Educators (CME). The Trinity College, London CME is a level four qualification, sitting between A levels undergraduate degree level study, and comprises the following six units:

1. understanding children and young people's musical learning,
2. planning, facilitating and evaluating young people's musical learning,
3. reflective practice and professional development in music education,
4. promoting children and young people's positive behaviour,
5. equality, diversity and inclusion in music education, and
6. safeguarding in music education.

Information about the CME promotes it as having been developed for anyone who works as a music educator with children and young people, including instrumental and vocal teachers working with music services, hubs, in schools or privately, early years and primary teachers, community musicians and workshop leaders, and professional musicians who undertake education work.

Through my collaborative work with the Musicians Union, Unit 6 of the Trinity College CME now includes playing-related injury prevention within the Safeguarding Unit and I have been invited by the Musicians Union to help produce online learning material. This will take the format of a series of short films designed to support learning for Unit 6 of the Trinity College, London, Certificate for Music Educators.

It is arguable that inclusion of injury prevention within Unit 6 of the CME may eventually have the greatest impact, reaching the widest audience across a variety of settings and geographical locations. It is anticipated that, although non-mandatory, the CME will become the qualification of choice for music educators and their clients (the parents who are paying for instrument lessons).

5.7.3 Dissemination of Findings at Residential Music Courses

I have been invited to make a practical contribution to numerous playing-based residential music courses for children and adults. This is a scenario where playing time for participants is markedly increased and this is one of the risk factors for playing-related overuse injury. I full list of the talks that I have given is included within Appendix A.

These talks have provided opportunities to increase awareness of risk factors for playing-related injury amongst both the musicians and the tutors on the courses. It also enabled me to provide them with strategies to lower the risk, such as warming up before playing, stretching after playing, being aware of the significance of rest and recovery time during breaks, and the importance to soft tissue function of being adequately hydrated and nourished.

5.7.4 Appointment to the Musicians Health Advisory Board of Help Musicians UK

In May 2017 I was invited to become a member of the newly formed Musicians Health Advisory Board of Help Musicians UK. Help Musicians UK was previously known as the Musicians Benevolent Fund. It is the leading charity in the UK form Musicians of all genres. It offers advice and financial support in times of financial hardship, it offers support and opportunities for emerging musicians at critical points in their career, and it offers support for retired musicians and those with chronic illness. The Musicians Health Advisory Board has been established to advise and oversee the strategic direction and quality assurance of health and welfare activities, service developments and service delivery of Help Musicians UK.

5.7.5 Joining the Healthy Conservatoires Network

In November 2017 I was invited to join a research group called the Healthy Conservatoires Network. This is a collaborative group spanning the UK Conservatoires and the wider performing arts sector, which aims to maintain, develop and support aspects of health promotion and occupational wellbeing for performing artists and help them to build sustainable careers.

They had spent five years researching within Conservatoires and having reached the end of several research projects were looking to extend the network beyond Conservatoires and into the pre-conservatoire setting.

5.7.6 Initiating Healthy Conservatoires Network U18

In the spring of 2018, I began discussions with one of the members of the Healthy Conservatoires Network, based at the Centre for Performance Science at the Royal College of Music in London. We are keen to initiate a working group called Healthy Conservatoires U18

as a forum intending to bring the aims of the Healthy Conservatoires Network to the UKs specialist music schools, the county music hubs and other youth music organisations.

5.7.7 Joining the Medical Committee of BAPAM

In the Autumn of 2017 I was invited to join the medical committee of the British Association of Performing Arts Medicine. I am the only physiotherapist on the committee and the only member of the committee with a specialist qualification in Education. Informed by this research, I am currently helping with the development of a series of taught modules about musicians health and wellbeing that can be offered and delivered by BAPAM and by the Musicians Union.

In summary, the interest in, and the impact that this project is having beyond the school, has been significant and gratifying. Where there has been resistance to engage with the issues of injury prevention from within the school, particularly from the instrument teachers and the HODs, organisations beyond the school are both interested and actively engaged.

5.8 Summary, Reflections and Re-evaluation to conclude the Second Cycle of Action Research

5.8.1 Summary and Reflections

The second cycle of Action Research was both energising and demoralising. The introduction of two completely new approaches to increasing awareness of risk factors for injury via the use of the instrument assessment process (5.3.1 pp194-195, 5.4.1 pp196-202) and though the introduction of the playing-related injury-prevention policy (5.4.2.3 p206) felt like a significant and positive step forwards. However, the low response rates to, and answers provided in the instrument teachers survey (5.5.3 p221), the pupil survey 5.5.5 p232) and the HOD survey (5.5.7 p238-239) were disappointing to the point of being personally upsetting:

- The five risk factors were still not universally known amongst the key stakeholders (5.5.3.1 p221, 5.5.5.1 p232)
- The services available through the school health centre were not universally known amongst the key stakeholders (5.5.3.7 p230, 5.5.5.3 p235).

The audit (5.5.8 pp239-243) showed a distinct change in the nature of the injuries being seen, with an increase in the rise of acute injuries being treated, and a reduction in (more difficult to treat) chronic and recurrent injuries. This indicates a change in the pupils

approach to playing-related injuries, seeking help early, and thereby in addition to enabling the injury to settle quickly, also getting advice about injury prevention in order to avoid recurrence. This is a really positive change.

Finally, my activities outside of the school, have probably had the greatest impact, in terms of me having access to receptive audiences at talks (5.7.1 p243), and the inclusion of injury prevention within the CME (5.7.2 p243) which over time, it is hoped may become the standard qualification for instrument teachers. It seems possible that knowledge of injury risk, and injury prevention, may be additionally addressed within the school, via (the rather circuitous route of) being brought into the school with instrument teachers who have completed the CME.

5.8.2 Re-evaluation

Clearly, the key stakeholders do not yet know all of the risk factors for injury, and the cyclical nature of Action Research, along with the cyclical nature of the school year, means that, in effect the process will continue beyond the submission of these thesis, through engaging in health promotion and injury prevention awareness work at key points in the school year:

- For pupils, their parents and the boarding house staff, a yearly calendar of events which place increase demands on pupils and so increase risk, can be created, and pupils can be given targeted reminders ahead of key events. such as pre audition, pre assessment, during orchestra courses. Parents can be sent copies of these reminders to pupils.
- For instrument teachers, trying to develop a programme of CPD will be a goal, but this will need the support of both the SMT and the HODs.
- For the HODs, continued efforts at improving channels of communication, and continuing to reinforce that these are issues of safeguarding and duty of care.

SECTION FOUR - Recapitulation

Comprising Chapters Six and Seven

In which, by way of discussion, the findings and the literature are woven together,
the research aims and research questions are revisited,
conclusions are stated,
limitations of the study are noted,
impact is evidenced,
contribution to multiple fields is announced,
and recommendations are made.

Chapter Six – Discussion.

Chapter Six contains a discussion of the findings in relation to the two research questions (6.1 pp250-254, 6.2 pp254-256). There is then a discussion of the two 'lightbulb moments' in terms of their impact on the development and direction of the project and in relation to the discourse provided by the literature (6.3 pp256-257). This is followed by comments on the extent of my success as a change agent (6.4 p257) and reflections on the effectiveness of using action research as a health promotion tool (6.5 p259-261).

6.1 Research Question One

To what extent can raising awareness amongst key stakeholders, of five pre-established risk factors for playing-related musculoskeletal disorders, influence risk taking behaviour (in relation to musculoskeletal disorders), in elite young instrumental musicians at a specialist music school?

The key stakeholders were identified as the pupils, the instrument teachers, the parents, the boarding house staff and the music HODs (4.5.2). The results of the second cycle of

Action Research were evaluated by surveying pupils, instrument teachers, parents and the heads of departments. The boarding house staff were not surveyed at this point because in the first cycle of Action Research they had voluntarily participated in a focus group meeting and had demonstrated complete engagement with, and understanding of the relevance of the risk factors.

The findings of these surveys (5.5) demonstrated that pupils did not know what the five pre-identified risks for playing-related musculoskeletal disorders were, thus indicating that the two cycles of Action Research had not been successful in increasing their awareness of the risk factors, and that therefore, pupils will be unlikely to be able to engage in a change in risk taking behaviour.

The key voices in the literature that have explored and discussed risk factors for playing-related musculoskeletal disorders and recommended the introduction of preventative curricula for musicians, extend from Zaza et al., (1997) and Blackie et al., (1999) who recommended more research be devoted to examining the introduction and application of injury prevention concepts among young musicians. The results of the second cycle of Action Research initially suggest that the pupils were not receptive to injury prevention strategies that had been introduced: although whether they were not applying what they had learned, or were not receptive to learning from the particular teaching strategies originally deployed, is unclear. However, this initial interpretation is confounded by the results of the second audit (5.5.8) which clearly showed an increase in the number of acute injuries coming for physiotherapy, indicating that pupils knew the benefits of seeking early advice and treatment for playing-related musculoskeletal disorders, and this is certainly a positive change in risk taking behaviour: injuries that are not treated promptly risk becoming chronic and, of significance, are more difficult to treat.

The 'Health Promotion in Schools of Music – Initial recommendations for Schools of Music' document (Chesky et al., 2006), is arguably the most influential single document to date, in the field of health promotion in instrumental music education. Its first declaration is that playing-related injuries are preventable and that in addition to treating injuries when they have occurred, schools of music should focus on prevention education. The findings from the original audit concur with this (4.1.1), in that the majority of injuries were preventable. My experience during this project suggests that targeted health promotion advice might be more effective if it came directly from the instrument teachers and the music department at the

school, rather than from the staff in the school medical centre, because the instrument teachers are the single most influential person on the musical development of the pupil (2.2.6). This was confirmed by the results of the focus group meetings (4.6.1), and the first parent survey (4.7.5.3). It may be that engaging the instrument teachers more effectively as advocates for musicians health and wellbeing, would lead to more positive influence on the pupils risk taking.

Chesky et al., (2006) declared that music schools influence student behaviour through factors such as collective values, beliefs and actions, and recommended that schools of music should adopt a health promotion framework. The introduction of a playing-related injury prevention policy at the school, as a direct consequence of this Action Research, sends a strong message to all stakeholders that the school believes injury prevention to be important enough to formalise it into a policy. This policy now forms part of the health promotion framework at the school.

Twelve years after the work of Zaza et al., (1997) and a decade after the work of Blackie et al., (1997), the majority of research in the area of health promotion and injury prevention was still looking at causes, incidence, risk factors and behaviour in relation to injury, rather than examining the introduction of health promotion strategies in music education. Kreutz et al., (2009) looked at the attitudes of conservatoire students towards their own physical health and established that students at two UK Conservatoires particularly neglected responsibility towards aspects of their physical health. This has strong parallels with the work of Gaunt (2010) who was also looking at Conservatoire students, and found that they rarely prioritised the development of planning or reflective strategies relating to career development, into their learning. I would argue strongly that the maintenance of physical wellbeing for young musicians makes a significant contribution to their eventual success as professional musicians, and that therefore developing knowledge and strategies that positively contribute to the maintenance of physical wellbeing should be a priority: the benefits of reducing risks and taking as much care of yourself as you do your instrument should be obvious, but within the field of music performance, including with prevailing attitudes at the school, there seems to be almost a wilful blindness to this.

By 2010, research was starting to look at the effectiveness of introducing a preventative curriculum. Zander et al., (2010) found that introducing a comprehensive preventative curriculum within a Conservatoire setting had a positive impact both on students'

performance and on their attitude towards health and risk taking, but it had no impact on pre-existing physical symptoms. They suggested that pre-existing conditions required treatment in an appropriate therapeutic setting, and that injury prevention strategies need to be introduced at an earlier point in music education, such as in the pre-conservatoire setting.

While I was very aware of this piece of research at the time it was published, and it acted to reinforce the significance and relevance of attempting to introduce preventative strategies at the school, the content of their comprehensive preventative curriculum was too detailed to have been introduced at the school as part of the EdD. The school as an organisation, quite simply, was not ready to introduce such an extensive curriculum. It is impossible to say for certain whether introducing a more comprehensive preventative curriculum at the school would have served to influence risk taking behaviour in relation to playing-related injuries, and to increase engagement with the topic, but, based on the work of Zander et al., (2010), it seems likely that it would.

Rickert et al., (2014) followed their 2013 study with a piece of work that found a culture, within professional orchestras, where musicians see injury as a sign of 'weakness, failure, and poor musicianship' (Rickert et al., 2014 p.94). They found that musicians conceal injuries from colleagues and from orchestral management staff, as they felt vulnerable to judgment about their technique or musicianship. Musicians felt that opening up about playing related injuries made them vulnerable to losing employment opportunities. With this pervading attitude towards injuries amongst professional musicians, it is not surprising that our pupils are not receptive and open to learning about injuries, injury risk, injury prevention and altering risk taking behaviour. It is a hidden and, quite literally, silent epidemic, which musicians do not discuss openly.

Rickert et al., (2014) suggest implementation of education measures, which may be effective at influencing individual behaviours and attitudes, as well as cultural change initiatives which could lead to long-term positive health outcomes in the orchestral workplace. The schools' introduction of the playing-related injury prevention policy certainly counts as a cultural change initiative within the school, promoting and formalising a positive strategy towards injury prevention. More time is needed to see if it will be effective at influencing individual behaviour, but it goes some considerable way towards adopting a health promotion framework as recommended by Chesky et al., (2006).

In summary, the vast majority (84 per-cent) of visiting instrument teachers did not respond to the survey (5.5.3) and the 16 per-cent of instrument teachers that did respond did not know the five risk factors. This implies that, despite being given many opportunities to, they have not engaged with the topic and are unlikely to engage, beyond what they are already doing, with encouraging their students to pay attention to risk factors for injury, unless there is a more formal requirement from the school, for example in the shape of a policy, to do so. Without input from the instrument teachers, it seems unlikely that real change will take place in pupils risk taking.

Additionally, none of the (four) HODs responded to the survey. From this it can be inferred that not only is risk taking behaviour is unlikely to have been influenced, but awareness of five risk factors for injury has not been raised amongst this significant groups of key stakeholders.

On asking the four HODs via email, about their experiences of including questions about risks for injury in the instrument assessments two did not reply, one was fairly non comital and one was extremely effusive about the pupils' positive responses. It is difficult to draw meaning from this, except to conclusively state that as a group, the HODs did not engage with my survey or my email asking about their knowledge of risk factors or enquiring about the inclusion of knowledge of risk factors for injury within the assessment process.

The feedback from the Parents was positive: there was a significantly higher unit response rate to the survey in December 2016 (56%) than to the survey in November 2015 (30.8%) indicating greater engagement with, or confidence in responding to the topic. After the second cycle of Action Research they felt that the school was monitoring pupils closely enough and parents /guardians were getting sufficient information. They were generally happy with what the school was doing in relation to playing related injury prevention. However, the parents were not more knowledgeable about the risk factors, nor significantly more aware of the services available through the school health service.

There was, however, a definite shift in parent attitudes towards supporting increasing pupil physical activity and fitness levels, between the two surveys.

In summary, In relation to Research Question One: I am unable to confidently state that I have increased awareness of the five risk factors for playing-related injury, and therefore the second part of the question related to the impact on behaviour change of increasing awareness

has not been addressed, and it is not possible to answer to what extent raising awareness amongst key stakeholders, of five pre-established risk factors for playing-related musculoskeletal injuries can influence risk taking behaviour (in relation to musculoskeletal injuries) in elite young instrumental musicians at a specialist music school,

However, the two cycles of Action Research have provided an abundance of material and ideas which have informed a list of recommendations (7.6).

It is worth reflecting on why involving the visiting instrument teachers and the heads of departments in a process of change has been so immensely challenging, and perhaps this can be attributed to the conservative nature of classical music education, which commonly cherishes and emphasises re-creating what has gone before, rather than embracing 'the new': creating rather than re-creating (Wollner & Ginsborg, 2011). This, along with musicians' inherent reluctance to openly discuss playing-related injuries, serves to keep the magnitude and extent of the problem hidden. These factors have made this tempt at implementing change in the setting of classical music education particularly and peculiarly challenging.

6.2 Research Question Two

To what extent can the incidence of playing-related musculoskeletal disorders be measurably reduced as a result of increasing awareness of risk factors?

This Action Research has been directed towards finding out what stakeholders know about risk factors for playing related musculoskeletal disorders and increasing awareness of these risk factors, and the second question was designed to directly measure the success (or otherwise) of the second of the research aims: to engage stakeholders in change behaviour to promote practices that place pupils at less risk for playing-related injury. It was hoped that the successful outcome of this would be a reduction in the number of playing-related injuries seen at the school.

The incidence of playing-related musculoskeletal disorders was re-measured by auditing physiotherapy notes for a second time. The results of the second audit of physiotherapy notes (5.5.8) indicate that there has been no appreciable drop in the numbers of instrumentalists from each group seeking physiotherapy appointments, with an overall increase in the number of pupils receiving physiotherapy treatment, and there was no significant change to the

anatomical region requiring treatment. At first appraisal, this strongly suggests that no impact has been made. However, one final piece of data looked at whether injuries were acute, chronic or recurrent and this showed a marked change between the audit of notes October 2008-December 2011, and the audit of notes September 2013-April 21017: the most recent audit showed a massive rise in the number of acute injuries being seen (almost doubled from 35 to 66) and a similarly massive drop in the number of chronic injuries being seen (almost halved from 52 to 27). There was a similar percentage drop in recurrent injuries (from 13 per-cent to six per-cent).

This is a very definite and very distinct change in the nature of injuries that are coming for physiotherapy treatment: significantly fewer recurrent and chronic injuries and many more acute injuries. This is significant from the perspective of the research question and is also immensely gratifying from a personal perspective. From a research perspective it indicates that the pupils are more aware that early assessment and treatment of playing-related musculoskeletal disorders is hugely beneficial, in that successful and prompt management of acute injuries stops them from becoming recurrent, and identification of the initial cause of the injury enables and equips pupils to reduce the likelihood of recurrence. The success of this is directly reflected in the reduction in number of both chronic and recurrent injuries presenting for treatment.

Chesky et al., (2006), declared that playing-related musculoskeletal disorders are preventable and that schools of music should produce injury free musicians. They recommended that pupils are encouraged to actively engage with health care resources: The shift towards seeing acute rather than chronic injuries reflects that pupils are engaging earlier with the physiotherapy service.

It may be that a higher profile presence of the school physiotherapist and increased awareness of the physiotherapy service in the parents and instrument teachers (5.5.1.4, 5.5.3.7), along with a consistent message to seek help early, has promoted this earlier referral of acute injuries to the service, and a resultant drop in the development of chronic and recurrent injuries.

This is certainly a change in behaviour which is promoting a practice that places pupils at less risk of developing chronic or recurrent playing-related injuries.

In summary, despite an increase in the in number of pupils being seen for physiotherapy, and despite the findings from the focus group meetings with the pupils during the first cycle of Action Research, and the findings from the surveys during the second cycle

of Action Research, both of which showed little engagement with the issue of playing-related musculoskeletal disorders and poor knowledge of the risk factors for them, the aim:

- to engage stakeholders in change behaviour to promote practices that place pupils at less risk for playing-related musculoskeletal disorders

has been partially achieved, in that pupils are less at risk of developing chronic or recurrent injury because they are seeking help early.

6.3 The Impact of Two 'Lightbulb Moments'

The reflective and reflexive nature of Action Research also enabled me to notice and respond to the two 'lightbulb moments' (5.1.4, 5.1.5) that occurred between the first and second cycles of Action Research and which presented ideas and opportunities, and galvanised renewed energy for the second cycles of Action Research (5.2, 5.3, 5.4). I was able to use new and previously un-thought of strategies to move the project forward in previously unplanned directions, namely:

- by including knowledge of risk factors for playing-related musculoskeletal disorders within instrumental assessments,
- and by raising playing-related injuries as a safeguarding issue at the school, leading to the implementation of the first ever playing-related musculoskeletal injury prevention policy within a specialist music school in the UK.

The impact of these two lightbulb moments has been mixed. In terms of the first, including knowledge of risk factors for playing-related musculoskeletal disorders within instrumental assessments, I had hoped that it would increase instrument teachers, HODs and pupils knowledge of the five risk factors, but the results of the surveys demonstrated that this had not been successful (5.5.3.1, 5.5.5.1, and 5.5.7).

The second lightbulb moment, of realising that playing related injuries was a safeguarding issue led to the implementation of a playing-related injury prevention policy and including injury risk within safeguarding training within the school. It also led to the inclusion of injury prevention within the safeguarding module of the Certificate for Music Educators (5.7.2). The impact of this has not yet been seen or evaluated, but it feels like a real opportunity for longer term change to occur both inside and outside of the school.

6.4 My Success as a Change Agent

Lunenburg (2010) identifies a change agent as someone who has the skill and power to stimulate, facilitate, and coordinate a change effort (3.3.2), and identifies that the success of any change effort depends heavily on the quality and workability of the relationship between the change agent and the key decision makers within the organization. My relationships with some of the key decision makers within the school, identified here as the senior leadership team and the Governing body of the school, has remained strong, with clear communication. I have felt supported by them and they see the value of the work that I am doing, not least, in that it will provide the school with a unique selling point of employing a Doctoral researcher on their staff and implementing evidence based best practice within their day to day running of the school.

However, Lunenburg (2010) also identified characteristics of how the change agent manages change, that dictate the success or otherwise of any change initiative (3.3.2). In this section I will comment on each of the characteristics in relation to my role as a change agent during this research process.

- Hemophily (how alike the change agent and the stakeholders are):
  The instrument teachers and the HODs and the pupils do not consider me to be like them, considering my role within the school to be separate from the music making aspect of the school, and additionally, they do not know me as a musician. The boarding house staff and practice supervisors and the parents, perhaps see me more as part of the pastoral, providing care for the pupils aspect of the school, which they are more involvement with.
- Empathy: without doubt, I consider myself to be by nature, an empathetic person, but I suspect that within the context of this research process, the HODs primarily saw me as a nuisance and an agitant as I have tried to push forwards a change agenda that they have resisted. While maintaining empathy for their stance through my understanding of the conservative nature of classical instrument education, my overwhelming feelings towards them at the point when none of them responded to the survey, was of frustration and exasperation.
- Linkage (the extent that the change agent and the stakeholders are tied though collaborative activities): The health promotion activities (5.4.3) and including risk factors for injury within the instrument assessment activity (5.4.1) were collaborative

activities with key stakeholders, but the implementation of the playing-related injury prevention policy (5.4.2) was not.

- Proximity (describing the physical and psychological closeness of the change agent and the stakeholders): That I was a part time member of staff was a distinct disadvantage in terms of my visibility within the school. The location of the school medical centre, slightly outside of the main school building also contributes to the phenomenon of 'out of sight, out of mind' decreasing the psychological proximity to the music department.
- Structuring (clear planning and structuring of change activities): the change activities in the second cycle of Action Research (5.4.1, 5.4.2, 5.4.3) were clearly planned and well structured. Communication with key stakeholders was enhanced by emails, letters, and notices in The Bulletin (Appendix C).
- Capacity (the company's capability of providing the resources needed for a successful change effort): My strong feeling is that the School could have provided more support for initiatives such as convening a meeting with the instrument teachers as a group, which has so far proved impossible to organise.
- Openness (the degree to which the change agent and organization members are willing to hear, respond to, and be influenced by one another): I think that the Instrument teachers and the HODs in particular, did not display openness in their willingness to be influenced.

In summary, the role of change agent is complex and the success, or not, of change initiatives is dependent on many variables. The list of characteristic identified by Lunenburg (2010) does not really address how best to manage the extreme resistance to change that I encountered.

6.4.1 Addendum

At the start of the school year 2018-19 the school had another major change of senior staff, including another new head teacher, a new director of music, and a new bursar. These new staff have all expressed much interest in promoting and prioritising injury prevention and musicians wellbeing at the school.

At the time of submitting this thesis in September 2018, the situation at the school was that

- the Playing-related Musculoskeletal Injury Prevention policy remains operational and is housed within the schools suite of health and safety policies,
- the instrument assessments no longer contain an element about risk factors for playing-related injuries.

The process of change remains slow and difficult. But without doubt the intentions of the new staff are to have playing-related injury prevention on the agenda for the school.

Additionally, reflection on changes in my own clinical practise since starting the EdD made me realise that I now spend time with each patient (musician or not) exploring in more depth what has happened to them, and identifying possible risk factors in order to try and help them avoid preventable injuries.

6.5 Action Research as a Health Promotion Tool.

Health promotion has been defined as "the combination of educational and environmental supports for actions and conditions of living conducive to health" (Green & Kreuter, 1991). Health promotion involves the combination of health education with administrative policy and decisions (2.2.4), and this Action Research project has combined attempts at health education via health promotion initiatives (5.4.1, 5.4.3) with policy change (5.4.2.3). This has been supported by the senior leadership team and the Board of Governors at the School.

The cyclical and flexible nature of Action Research have enabled me to be responsive to 'lightbulb moments' (5.1.4, 5.1.5), changing the direction and emphasis of the research in response to real world, and real time events that occurred during the timeframe of the EdD.

Although the formal Action Research has finished at the end of the second cycle, the process will continue in a less formal way, as the regular rhythms of the school year demand actions and reflections at certain points.

Chapter Seven – Conclusions, Strengths, Limitations, Originality, Evidence of Impact, Contributions to Multiple Fields and Recommendations.

The conclusions in relation to the research questions (7.1.1 p262, 7.1.2 p263) and also in relation to professional practice (7.1.3 p263) are stated, followed by reflections on the strengths (7.2.1 p265), limitations (7.2.2 p266) and originality (7.3 p266) of the study.

This study has had significant impact beyond its original scope and setting, and this is evidenced in 7.4 (pp266-271), while the contribution that this work has made across numerous fields is shown in 7.5 (pp271-274). Finally, recommendations for future work are made in 7.6 (274-275).

7.1 Conclusions

The focus of the study was informed by several factors: First, the incidence of playing-related musculoskeletal disorders at the school was real and to my thinking, was unacceptable. This presented a moral imperative on which to act.

Second, the literature consistently reveals a high incidence of playing-related pain and injuries across all age groups of instrumentalists, from young musicians, through conservatoire students, to professional orchestral musicians (see Table 2.1 on pp.26 & 27), but there was a complete absence of any literature related to injury prevention in pre-conservatoire music education.

Thirdly, the development and introduction of a preventative curricula in music education (Williamon et al., 2009; Zander et al., 2010; Rickert et al., 2013) to date, have only been applied within music conservatoires. Research supporting the development and implementation of preventative curricula in a pre-conservatoire setting (Shafer-Crane, 2006; Ginsborg et al., 2009; Ginsborg in Macdonald et al., 2012;) is theoretical, with no research found into actual examples of pre-conservatoire preventative curricula.

The original aims of this research (3.1) were to:

a) increase stakeholder-awareness of risk factors for playing-related musculoskeletal disorders in young musicians
b) engage stakeholders in change behaviour to promote practices that place pupils at less risk for playing-related musculoskeletal disorders.

Your attention is drawn to the four key words that have been highlighted because they are absolutely central to this story; the original purpose of this study was to address, in some way, the issue of playing-related injuries in young instrumental musicians at a specialist music school.

Fundamental aspects of both cycles of Action Research were engaging key stakeholders in change and increasing their awareness that playing-related injuries were a problem and that they were largely preventable, and that there were five main risk factors for these injuries,

This thesis represents seven years of work focussed on trying to implement a change in attitudes and behaviours toward playing-related musculoskeletal injuries in young musicians, with the goal of reducing the incidence of injuries seen at a specialist music school. It has added to the body of knowledge within the field of performing arts medicine that measures incidence of injury, and, by realising that this is a safeguarding issue, is unique in its method of addressing this.

The most significant features of this study are

1. the **inclusion of injury prevention** under the umbrella of safeguarding **at the school** (5.4.2.3),
2. the **inclusion of injury prevention within the** safeguarding module of the **CME**, outside of the school (5.7.2),
3. the **resistance from key stakeholders** within the school (the HODs, the instrument teachers and the pupils), to engage with the surveys (5.5.3, 5.5.5, 5.5.7),
4. the **interest that this has generated** in instrument education outside of the school **outside of the school** (5.7.1, 5.7.2, 5.7.3),
5. the **opportunities that have arisen** to participate in advisory groups and research groups (5.7.4, 5.7.5, 5.7.6, 5.7.7),
6. **the field crossing nature of this research**, because of my multiple roles and professional identities (1.1).

In the following sections I will draw conclusions in relation to each of the research questions, and in relation to professional practice.

7.1.1 Answering Research Question One

Question One. To what extent can raising awareness, amongst a variety of stakeholders, of five pre-established risk factors for playing-related musculoskeletal disorders, influence risk taking behaviour (in relation to musculoskeletal disorders) in elite young instrumental musicians at a specialist music school?

The surveys at the end of the second cycle of Action Research (5.5.1, 5.5.3, 5.5.5, 5.5.7), showed that this study has not been successful in increasing stakeholder-awareness of risk factors for playing-related musculoskeletal disorders in young musicians (5.5.1.1, 5.5.3.1, 5.5.5.1). However, the audit (5.5.8) showed one change in risk taking behaviour in pupils, in that they were seeking help at an earlier stage in the injury, which reduces the risk of injuries becoming chronic and has therefore partly engaged stakeholders in change behaviour to promote practices that place pupils at less risk for playing-related musculoskeletal disorders.

7.1.2 Answering Research Question Two

Question Two. To what extent can the incidence of playing-related musculoskeletal disorders be measurably reduced, as a result of increasing awareness of risk factors?

The incidence of playing-related musculoskeletal disorders as measured by the number of pupils seeking physiotherapy, increased in the second audit, compared to the first, indicating that the incidence has not been measurably reduced. However, the nature of injuries being seen for physiotherapy has significantly altered, from more chronic and recurrent injuries in the first audit to more acute and fewer chronic or recurrent injuries in the second audit. This indicates a distinct and positive shift in the way playing-related injuries are viewed and managed, from something to be ignored for as long as possible, until it became a (much more difficult to treat) chronic problem, to something to be taken notice of and addressed early.

7.1.3 In relation to Professional Practice

This thesis is of relevance to the professional practice of the instrument teachers, of the HODs, and to me.

Once safeguarding is understood to mean ensuring that the children in our care are not harmed, and once instrument teachers understand that playing-related musculoskeletal disorders are preventable, it becomes a moral imperative for instrument teachers to change their teaching practice to include injury prevention, including knowledge of risk factors for injury, advice about warming up before playing and stretching after playing, and understanding the significance on soft tissues of rest and recovery time. The literature indicates that instrument teachers are ideally placed to act as advocates for musicians health and wellbeing, and to promote best practice in injury prevention to their pupils (Blackie et al., 1999; Chesky et al., 2006; Creech, 2012; Creech & Hallam, 2011; Gaunt, 2010; Guptill, 2011; Lockwood, 1988; Smilde, 2005; Spaulding, 1988; Zaza, 1993), but do not feel equipped to do so (Norton et al., 2015).

This thesis strongly supports the introduction of continuing professional development of instrument teachers, and strongly suggests that this includes teaching them about injury risk and injury prevention, and significantly about why it should be included in their instrumental teaching. The HODs are the direct managers of the instrument teachers and should be leading this change, but significant preparatory work with the HODs will be needed, before this is likely to happen.

In terms of my own professional practice, as a physiotherapist, I will continue to use (and often prioritise) patient education within treatment sessions, as a mechanism to reinforce messages about risk factors for playing-related injuries and about how injuries can be prevented. As an educational researcher, I will aim to continue to disseminate my findings across a number of platforms (see sections 7.4 and 7.5).

7.2 Strengths and Limitations of this Study

7.2.1 Strengths

Major strengths of this study are that:

- I was able to use the trustworthiness framework (3.4 and Figure 3.1), and that I adhered closely to the characteristics of Action Research (3.4.1.1):
    - I was an insider researcher
    - Reflection on findings after the first cycle, and the ability to be reflexive to those findings, shaped the second cycle.

- Two full cycles of enquiry, intervention and evaluation were completed
- The study involved key stakeholders within the process.

- that the reflective and reflexive nature of this methodology allowed me to be responsive to the findings from the first cycle and enabled me to perceive a 'lightbulb moment', when playing-related injuries were recognised as a safeguarding issue, leading to the introduction of new, innovative strategies within the school, in the second cycle.
- The unique field crossing nature of this research and the multiple roles that I inhabit.
- This study has confirmed that the extent of playing-related musculoskeletal disorders in young instrumentalists at the school.

7.2.2 Limitations

I have attempted to confine the scope of the study to matters directly linked to playing-related injury prevention and health promotion in a specialist, pre-conservatoire music school. This has limited the study, in that there is a significant body of literature about assessment for learning, about change management, and about injury risk and injury prevention in sports science and sports coaching, but exploring each of these in more depth would have taken this work on a tangent that, while interesting, would have detracted (and distracted) from the heart of this story.

The tradition of classical music education is extremely conservative. Indeed, the very word Conservatoire stems from the Latin root 'conservare', itself a composite word from 'con' meaning 'together', and 'servare' meaning 'to keep'. It is a tradition, where the very name of the major teaching establishments suggests that change does not come readily nor rapidly. Significant change to practice will take far longer than the time scale of this Doctoral project so another limitation of this study was, therefore, the amount of change that could be achieved within the time constraints imposed by the necessity to complete this thesis within a pre-establishes and demarcated time frame.

Inability to convene focus group meetings with groups of parents and instrument teachers made the method of data collection from these key stakeholders different from the other four key stakeholder groups and this difference in data collection techniques is a

weakness. It is likely that a focus group meeting would have revealed different thoughts, and feelings from the surveys.

The response rate to the instrument teachers survey, the HOD survey and the pupil survey were all very low, and this has limited the study, in that responses cannot be generalised to each of those key stakeholder groups. However, the low response rates themselves provided a glimpse into the extent of the lack of engagement with the topic.

7.3 Originality

This work has several original and unique features.

- It is the first ever piece of doctoral level research carried out by a physiotherapist employed within a specialist pre-conservatoire age music school.
- It has driven policy change at the school.
- It uniquely crosses the fields of music education, education research, performing arts medicine and physiotherapy and this has generated the following original features:
    - It has used education research as a mechanism to drive health promotion
    - It has used education research as a mechanism to increase the profile of performing arts medicine within the field of physiotherapy
    - Other physiotherapists have successfully been awarded Doctor of Education but these have all been in relation to physiotherapy education, and I am the first to work towards the award of Doctor of Education beyond the topic of physiotherapy education.
    - I am the first member of the Chartered Society of Physiotherapy to study at Doctoral level at the University of Cambridge
- It is the first substantial piece of Action Research based within a specialist music school.
- It is the first piece of performing arts medicine research targeting injury prevention within a pre-conservatoire boarding school in the UK.

7.4 Evidence of Impact

Impact of research has been defined as research which brings a demonstrable contribution to professions, professional practice or professional learning in the form of benefits to individuals, institutions, organisations and/or society and the economy (Costley & Fulton, 2018).

In this section I am going to provide evidence of the impact that this work has made across a number of fields, before discussing the demonstrable contributions that it has made to those fields. The final section makes recommendations, based firmly on the findings and discussion sections.

Appendix A shows a list of related activities (publications, conference presentations, teaching sessions, invitations to talk) that I have undertaken since starting the EdD which have both contributed to and provide evidence for, the impact made by this study.

7.4.1 Injury Prevention and Safeguarding in Pre-Conservatoire Music Education

Safeguarding musicians' health and wellbeing was first mentioned in the literature by Zaza & Farewell (1997) in relation to Conservatoire students, but I am the first person to link playing-related injury prevention with safeguarding within the context of pre-conservatoire level instrumentalists in a specialist music school.

Research about playing-related injuries and injury prevention in pre-conservatoire level musicians is scant and has largely focused on measuring incidence of, and attitudes towards, playing-related injuries (Ackermann & Driscoll, 2013; Britsch, 2005; Fry et al., 1988; Fry & Rowley, 1989; Lockwood, 1988; Manchester, 1997; Ranelli et al., 2008; Ranelli et al., 2011; Shoup, 1995). The awareness of safeguarding in specialist music schools is particularly heightened in the wake of a series of serious historic allegations of sexual abuse across the sector. Once safeguarding is understood in the broadest of terms, to simply mean taking measures to ensure that harm does not come to the people in your care, then this work, which has highlighted that the majority of playing-related injuries are preventable, has enabled me to make the logical and inevitable step of overtly stating that injury prevention in young musicians as a safeguarding issue.

7.4.2 Introduction of the First Playing-related Injury Prevention Policy in a Pre-Conservatoire Setting

As a direct result of this thesis I have written and subsequently driven the introduction of the Playing-related Injury Prevention Policy to the school (Appendix M).

The need to 'policy-ize' playing-related injury prevention arose because less formal methods of attempting to increase awareness of risk factors for playing-related injuries were not being given attention. Formalising it into a school policy means that it is no longer just 'noise' being made by a part time staff member in the health centre, but is recognised by the

senior leadership team and the Board of Governors of the school as an important and valid issue. It means that all staff have been (and will continue to be) directed to the existence, location and contents of the policy, beyond the completion of this thesis.

7.4.3 Raising Awareness of Risk Factors for Playing-related Musculoskeletal Disorders in Pre-Conservatoire Music Education - within the school

Through this work, I have increased awareness of risk factors for playing-related musculoskeletal disorders within the school: amongst pupils, parents, the senior leadership team, the music department, heads of departments, and boarding house staff groups at the school, and to a significantly lesser extent amongst the visiting instrument teachers.

As (to the best of my knowledge) the only education-researcher-practitioner located within a specialist music school, I have had unique opportunities and been uniquely placed to gain insights into the specific culture of elite classical music education at pre-conservatoire level. It is acknowledged that classical music education is focussed on 're-creating' what has come before, and this goes some way to explaining the resistance to change that I have experienced from some stakeholders. Other explanations for the resistance include the difficulty of managing and negotiating change within organisations (Fullan in Bennett et al., 2003; Fullan in Wise et al., 2013) and the difficulty of deploying effective health promotion strategies. Raising awareness of potential risks for injury would be recognised by my professional body as a successful health promotion strategy.

7.4.4 Raising Awareness of Risk Factors for Playing-related Musculoskeletal Disorders in a Pre-Conservatoire Music Education - beyond the School.

It is clear that music teachers are ideally placed to act as advocates for their pupils wellbeing (Norton et al., 2015), and through collaborative efforts with the Musicians Union, the British Association of Performing Arts Medicine, the Music Masters and Mistresses Association and the English State Education Systems County Music Hubs I have been able to talk to instrument teachers who do not work within the school where this research was set (5.7.1). By giving talks for and to these groups I have been able to increase awareness of issues around playing-related injuries in young musicians beyond the original setting and ambitions of the research (Appendix A). The process of preparing and giving the talks, and receiving and reflecting on feedback about the talks, has reinforced to me the importance and

relevance of this research, and has assisted a great deal in developing my thinking, and honing the message.

7.4.5 Inclusion of Playing-related Injury Prevention within the Safeguarding Module of the Certificate for Music Educators, Trinity College, London

As detailed in 5.7.2, Unit 6 of the Trinity College CME 'Safeguarding in Music Education' now includes playing-related injury prevention. This occurred as a direct result of me phoning the MU to ask if they had anything comparable to Dance UKs 'Industry Standards for Dancer's Health, Wellbeing and Performance' (5.1.3) for musicians.

7.4.6 Dissemination of Findings at Residential Music Courses

I have contributed to numerous national level playing-based residential music courses for children and also a chamber music course for adults (see Appendix A). Providing a talk at the beginning of such courses serves as a reminder of useful strategies for maintaining good physical health and comfort, for participants and staff to employ during the course.

7.4.7 Fostering an Interdisciplinary Approach and Generating Impact Across Multiple Platforms

Through my work as an assessing clinician and also as a member of their 'trainer network' I have been invited to speak on behalf of BAPAM about risk factors for injury and about injury prevention in young musicians at a number of high profile events. Additionally, I have spoken for the Musicians Union, at a number of musicians CPD events. I have also presented aspects of this research at a number national and international conferences across the four fields of physiotherapy, performing arts medicine, education research and music education.

The opportunity to talk about injury risk and injury prevention for young musicians across such broad range of settings has been very positive, both in terms of developing my thinking and my presentation skills and targeting different audiences with different material. Gratifyingly, most presentations have resulted in further invitations to present somewhere else. This tells me that I am presenting current material in an appropriate and engaging format, and that there is an ongoing interest in this work.

A full chronological list of conference presentations, lectures and talks at CPD events is provided in Appendix A.

7.4.8 Appointment to the Musicians Health Advisory Board of Help Musicians UK

Information about the Musicians Health Advisory Board of Help Musicians UK is detailed in 5.7.4. My experience in the pre-conservatoire setting is unique within this group, and I am in a position to provides them with insight as to what can go wrong, and also exemplify good practice in a pre-conservatoire setting.

7.4.9 Joining the Healthy Conservatoires Network

In November 2017 I was invited to join the Healthy Conservatoires Network. A brief outline of the work of the Healthy Conservatoires Network is given 5.7.5. My contribution to this network is from the perspective of being able to provide unique insights from within the pre-conservatoire setting.

7.4.10 Initiating Healthy Conservatoires Network U18

Healthy Conservatoires Network U18, as described in 5.7.6 is in its infancy. My unique location as an insider researcher practitioner within one of the UKs specialist music schools, along with my commitment to this field will enable me to contribute to the development of this limb of the Healthy Conservatoires Network.

7.4.11 Joining the Medical Committee of BAPAM

As detailed in 5.7.7, in the Autumn of 2017 I was invited to join the medical committee of BAPAM.

The BAPAM Medical Committee is a subcommittee of the BAPAM Board. It is responsible for overseeing all aspects of BAPAM's clinical work and advising the Board of Trustees on appropriate policy. The main responsibilities of the committee are

- clinical governance
- overseeing the provision and development of clinical services,
- Education and Training for both performing artists and healthcare professionals,
- Research and dissemination of knowledge and good practice within Performing Arts Medicine, including clinical audit and outcomes.

As the only physiotherapist on the committee, I am their musculoskeletal advisor. I am also the member of the committee with a higher degree in Education, which gives me the authority to help them to develop their taught modules.

7.4.12 Summary

'Impact can be difficult to predict or control, with circles of influence emergent from the work of EdD students expanding outwards towards as yet unknown destinations'

(Flutter in Burnard et al., 2016 p.7)

This quote from Julia Flutter, precisely summarises the impact of this project, with circles of influence continuing to expand far beyond the setting of the school (7.4 pp266-271). In this section I have presented the impact that this work has had on the stakeholders within the school and its influence on policy and practice within the school (7.4.1 p267, 7.4.2 p267, 7.4.3 p267). I have also presented the unanticipated and significant impact that this work is having beyond the setting, context, intentions and ambitions of the original project (7.4.4 - 7.4.11 pp268-270). The impact of this work is making contributions in multiple fields, and in the next section I state the contributions that this work has had and is having.

7.5 Contributions to Multiple Fields

In this section I discuss the contributions that this research has had across multiple fields. This is because of the unique inter-disciplinarity of the project: as a clinical physiotherapist working within a specialist school and undertaking a Doctorate of Education, I had feet in many camps, and the contribution that I have made is reflected across four distinct fields.

7.5.1 Music Education

The first field that I will comment on is Music Education. Traditionally music education is the field of study that looks at the teaching and learning of music. It encompasses a number of areas including the acquisition of music knowledge, the appreciation of music, the acquisition of technical and motor skills to play instrument, and the creative process by which new music is produced. This impact of this project forms the basis for strongly recommending that music education also routinely includes a new domain: that of musicians' health and wellbeing. In the following sections I highlight how Action Research has been effectively used to change policy within a specialist music school, and how it has been used in a paradigm shift in Music Education

7.5.1.1 Action Research for Policy Change

This Action Research project has culminated in the introduction of a new policy within the school. This was not one of the original research aims, but the reflective and reflexive nature of Action Research enabled previously unanticipated and unplanned directions to be taken as the project evolved. This is the first time that playing-related injury prevention has specifically been addressed via inclusion in a policy in a specialist pre-conservatoire music school.

7.5.1.2 Action Research and a Paradigm Shift

Classical music education is hyper-focused on reproducing 'what has come before' and this contributes to an extreme resistance to embracing change, even when that change has obvious benefits to the young people directly involved, to instrument teachers, and to organisations that house classical music education. This project has seen the beginnings of a shift in the paradigm that paid little attention to the causes of playing-related injuries in young musicians, and less attention to taking steps to actively prevent playing-related injuries.

7.5.1.3 The Certificate for Music Educators

Inclusion of injury prevention within the safeguarding module of the Certificate for Music Educators has the potential to make the greatest contribution to changing awareness of risk factors for playing-related injury in young musician, through the breadth of who the CME is targeted at.

These three factors demonstrate how this innovative work has contributed to the field of music education.

7.5.2 Physiotherapy

This research has contributed to the field of physiotherapy in three distinct ways.

7.5.2.1 Using Education Research to Drive Health Promotion

An emphasis on health promotion (and physical activity) is currently central to government policy across the UK. Physiotherapists are ideally placed to contribute to this initiative through our understanding of the importance of health promotion to avoid ill health and injury, and through our direct contact with our client/patient groups. The majority of Physiotherapy research is qualitative in nature, looking at clinical interventions using the

scientific method. This Action Research, which placed health promotion centrally (via promoting knowledge of risk factors for playing-related musculoskeletal disorders), has contributed directly to the evidence base about how physiotherapists can use Education Research Strategies to successfully drive health promotion.

7.5.2.2 Influencing Policy and Practice through Research

The Introduction of the Playing-related Injury Prevention Policy at the School is a measure of the impact that this project has had on influencing Policy within the School. This is a unique contribution to the field of Physiotherapy.

Additionally, my membership of, and contribution to the Musicians Health Advisory Board of Help Musicians UK will further demonstrate the contribution that physiotherapy as a profession, and physiotherapists as individuals can make to influence policy and practice at national level.

7.5.2.3 Increasing the Profile of Performing Arts Medicine within the field of Physiotherapy

The clinical field of Performing Arts Medicine is a small one. The majority of physiotherapists are employed either within a hospital setting, where they typically, are involved with the treatment and rehabilitation of ill or injured patients, or in an outpatient clinic setting, typically treating patients with neck or back ache, or sports injuries. Presenting my research at Physiotherapy Conferences has enabled me to increase the profile of Performing Arts Medicine within my profession.

7.5.3 Education Research

This research has contributed to the field of education research in two specific areas.

7.5.3.1 Action Research within a Specialist Music School

This is the first piece of research to be set within a specialist boarding school for young musicians. It is also the first piece of research in such a setting to be carried out by an insider researcher. These two factors make this work a unique contribution to the field of Education Research

7.5.3.2 Doctorate of Education

The originality and uniqueness of this work have arisen as a direct result of working towards a Doctorate of Education, furthermore, the very involvement in the EdD community at Cambridge, and the very process of doing the research has proved transformative for me, academically, professionally and personally.

7.5.4 Performing Arts Medicine: Pre-conservatoire Injury-prevention Research

All previous research about injury prevention has taken place within conservatoires, and all has indicated that injury prevention in conservatoires makes no impact on injuries acquired prior to attending conservatoire. All recommended that injury prevention initiatives should be started in pre-conservatoire settings. This piece of work contributes to filling this gap in the research.

This is also the first piece of research that has attempted to implement health promotion and injury prevention strategies in a specialist music school. All previous research on pre-conservatoire level musicians has looked at incidence of injuries or attitudes towards injuries.

This research has made a contribution to the field of Performing Arts Medicine through its work by an insider researcher, towards implementing health promotion and injury prevention initiatives at a specialist music school.

7.5.5 Summary

As a direct consequence of the multiple identities that I inhabit, his work has made multiple unique contributions to the fields of Music Education (7.5.1), Physiotherapy (7.5.2), Education Research (7.5.3) and Performing Arts Medicine Research (7,5,4).

7.6 Recommendations

As a direct result of this study I am making a number of recommendations for future work. I have divided these recommendations into two main areas. Some for within the school, and some for beyond the school. All of them could form the basis for further research.

7.6.1 Recommendation: Within the School

- That the school continues to include information about risk factors for injury within the instrument assessment process,

- That a 'fitness for musicians' or 'fit to play' module of physical activities shown to be beneficial for musicians, is developed and implemented in the school.
- That work on introducing a preventative curriculum at the school continues and is developed to run throughout each of the school year groups.
- That the school develops a programme of in-service training/continual professional development sessions that visiting instrument teachers are required to attend. This would provide the opportunity to meet colleagues in order to discuss matters related to their teaching practice, and this could reduce feelings of isolation. Additionally, participation in CPD will improve instrument teachers skills, keep them abreast with current thinking in the field of instrument teaching, and try and ensure best practice.
- That the school develops an in-service training programme for other key stakeholders.

7.6.2 Recommendations: Beyond the School

- That the other four specialist music schools within the MDS group are encouraged to adopt and implement a Playing-related Injury Prevention Policy via inclusion in the Healthy Conservatoires U18 Network
- That other Music and Dance Scheme Funded pre-conservatoire level music education organisations, such as the junior conservatoires and youth orchestras are encouraged to adopt and implement a Playing-related Injury Prevention Policy.
- That parents of pupils in the UK Specialist Music Schools are explicitly told of the benefits of membership of the BUPA schools insurance policy, in terms of it enabling rapid access to specialist healthcare through the independent sector.
- That this initiative be expanded to the graded instrument exams run by exam boards such as Trinity College London, and the Associated Boards of the Royal Schools of Music.
- That clinical work in performing arts medicine for musicians includes explicit reference to and information about risk factor for playing related injuries

- That the County Music Hubs are approached about disseminating information about risk factors for playing-related musculoskeletal disorders.
- That the Healthy Conservatoires Network broadens its remit to fully develop Healthy Conservatoire U18 which would include the MDS funded specialist music schools.

7.6.3 Driving the Recommendations Forward

For the recommendations to be driven forward within the school, it will be necessary to continue to develop close and collaborative working relationships with the new Headteacher, the new Bursar and the rest of the senior leadership team. It will be particularly important to develop a close working relationship with the new Director of Music who is the manager of the HODs and the visiting instrument teachers, and who will be key to influencing the visiting instrument teacher. Clarifying to all staff members the link between injury prevention, awareness of risk factors for injury, and the duty of care that we have to the pupils.

We already have plans for the spring of 2020 to have a day at the South Bank Centre, London, when all the instrument teachers will be invited to a day of CPD activities.

For the recommendations beyond the school, at the point of submitting this thesis, the Healthy Conservatoires Network is moving forwards with plans to launch a network for all of the specialist music schools, in order that best practice can be shared amongst the pre-conservatoire network., and the group of physiotherapy staff who work for BAPAM are beginning to meet regularly, in order to agree commonality on the injury prevention advice that we offer patients at the point of assessment and treatment.

The EdD process has been driven forward throughout by

- the conviction (now proven) that playing-related injuries are preventable,
- the moral imperative to act on this,
- the ethical drive to 'do the right thing'.

The process has at times been exhilarating and at times completely exhausting and demoralising. I hear this is normal. But throughout the seven academic years that the EdD has taken, and the ten years that I have worked at the school, the drive to try and make a change to a situation that I felt was wrong and could be better, never, ever got squashed. The EdD

process provided structure and credence to my work, and the un-anticipated consequences (5.7) and the impact (evidenced in 7.4) have made the journey utterly worthwhile.

Although this is the end of this thesis, it is certainly not the end of the journey of change for those of us working to improve musicians' health and wellbeing. It is a milestone on a long path.

Fine

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Appendix A.

Chronological list of conference presentations, conferences attended, publications and invitations to talk since starting the EdD

Appendix A.

Chronological list of conference presentations, conferences attended, publications and invitations to talk since starting the EdD.

1st June 2012 - Platform Presentation, Kaleidoscope Conference,
Faculty of Education, University of Cambridge.
An initial review: The institutional problem of musculoskeletal injuries in instrumental students at Conservatoires.

19th – 23rd July 2013. Delegate. Performing Arts Medicine Association (PAMA) Conference and Symposium.
Snowmass, Colorado, USA.
Maximizing Performance: Artistry, Implementation and Empowerment

11th-12th October 2013 - Poster Presentation, PhysiotherapyUK 2013,
Chartered Society of Physiotherapy Annual National Conference,
Birmingham, UK.
'An Audit of Playing Related Injuries in Elite Young Musicians'.

31st October 2013. Invited Speaker, University of East Anglia
Physiotherapy Students Society
University of East Anglia, Norwich.
'Physiotherapy in Performing Arts Medicine'.

December 2013. Publication.
Upjohn, S. *Playing Related Injuries in Elite Young Instrumental Musicians: A Physiotherapists Perspective*. MUSIC Mark Magazine ISSUE 3 - Winter 2013/14

9th February 2014. Invited Presenter. Seventh Series of Conferences for Professional Development in the Arts, International Webinar,
Faculty of Education, University of Cambridge.
Ways of Creatively 'Me-searching' and 'Re-searching' as practitioner-based and practice-based researchers.

Spring 2014. Publication.
Sarah Upjohn in conversation with Keith Alyling. ENSEMBLE Magazine (MMA Music Teaching Professionals) No. 92 / Spring 2014 pp26-27. *Musculoskeletal Physiotherapy and playing related injuries in instrumental musicians.*

16th May 2014. Invited Speaker. Association of Chartered Physiotherapists in Occupational Health and Ergonomics, Annual National Conference
Birmingham, UK.
'Physiotherapy in Performing Arts Medicine'

6th June 2014. Invited Speaker. Music and Dance Scheme Schools Headteachers Meeting – Chetham's School of Music, Manchester.

'Playing Related Injuries in Elite Young Musicians'

July 2014: Publication
Upjohn,S. *The Doctorate of Education Adventure: An Update*. British Association of Performing Arts Medicine Journal Issue 2. July 2014.

25th October 2014. Invited Speaker. Cambridge University Festival of Ideas –Chapel at Churchill, Churchill College, University of Cambridge.
'The idea of the Athletic Musician: Introducing Health Promotion Practices from the Fields of Sports Coaching and Dance Training into Instrumental Music Education'.

24th, 25th & 26th October 2014 - Platform Presentation, Building Interdisciplinary Bridges Across Cultures (BIBAC) Conference, 2014,
Churchill College and Homerton College, University of Cambridge.
'Applying Inter-disciplinarity to Arts Practices and Performances: understanding some of the conflicts which arise with the introduction of well-established health-promoting practices from the disciplines of elite sports coaching and elite dance training, to the education of elite young instrumental musicians'.

19th – 21st November 2014. Platform Presentation, 1st International Music and Performing Arts Conference (IMPAC)
University Pendidikan Sultan Idris, Tanjung Malim, Malaysia
'Risk-factors for Playing Related Injuries in Elite Young Musicians'.

12th February 2015. Invited Speaker. Music Masters and Mistresses Association (MMA) Regional Meeting ,
The Leys School, Cambridge.
'Are You Sitting Comfortably?'

16th May 2015. Invited Speaker. Music Masters and Mistresses Association (MMA) Annual National Conference.
Wellington School, Somerset
'Are You Sitting Comfortably?'

17th May 2015. Invited Speaker. BAPAM National Study Day.
Anglia Ruskin University, Cambridge
'Problems for Pianists'

27th June 2015 – Doctorate of Education Conference: Generating Impact Through Practice-based Doctoral Research Designed for Educational Professionals.
Faculty of Education, University of Cambridge.

1. Poster Presentation:

'Injury Prevention, Health Promotion and Performance Wellness in Elite Young Instrumental Musicians at a Specialist Music School: an Overview of an EdD project'

2. Group Platform Presentation using Prezi: Wellbeing and Inclusion Research Community:

'3 moments of Reflexivity in an Action Research project aimed at changing Attitudes and Approaches to Playing Related Injuries in Young Instrumental Musicians'

Summer 2015. Publication
Upjohn, S. *Risk Factors for Playing related Injuries in Young Musicians. Advice from a BAPAM Physiotherapist* Piano Professional. Issue 38. Summer 2015 pp15-17

3rd September 2015. Invited Speaker INSET day for Visiting Music Teachers -.
Exeter School, Exeter.
'Are You Sitting Comfortably?'

11th September 2015. Invited Speaker. INSET session for visiting Music Teachers -
St John's College School, Cambridge.
'Are You Sitting Comfortably?'

24th September 2015. Invited Speaker. INSET session for instrumental teachers.
English Folk Dance and Song Society - Cecil Sharp House, London.
'Are You Sitting Comfortably?'

5th March 2016. Invited Speaker. British Association of Performing Arts Medicine INSIGHTS Day
Musicians Union Head Quarters, London.
'Are You Sitting Comfortably?'

2nd April 2016 Invited Speaker. National Youth Chamber Orchestra Residential Course, Queenswood School,
Hertfordshire.

18th April 2016. INSET Session for staff.
The Purcell School for Young Musicians, Hertfordshire.
'Every Body Matters'

12th May 2016. Invited Speaker. Musicians Health and Wellbeing: an interdisciplinary approach. A one day research seminar funded by the British Psychological Society (Division of Health Psychology).
Royal College of Music, London.
'Raising Awareness of risk factors for playing related injuries in young musicians'.

7th June 2016. Invited Speaker. Seminar.
Centre for Music and Science,
Faculty of Music, University of Cambridge.
'Using Action Research to work towards Injury Prevention and Health Promotion in Young Musicians'

25th June 2016. Doctorate of Education Conference: Sharing Reflexive Doctoral Research Practices for Professionals
Faculty of Education, University of Cambridge.

1. Wellbeing and Inclusion Research Community Group Platform Presentation using Thing-Link: 'Reflexivity in the Doctoral Research Journey'

2. Platform Presentation: 'Three moments of Reflexivity in an Action Research project aimed at changing Attitudes and Approaches to Playing Related Injuries in Young Instrumental Musicians'.

3. Poster Presentation: 'Injury Prevention, Health Promotion and Performance Wellness in Elite Young Instrumental Musicians at a Specialist Music School: an Overview of an EdD Project'.

30th & 31st July and 1st August 2016. Workshop Presentation. Building Interdisciplinary Bridges Across Cultures (BIBAC) Conference 2016
Churchill College and Homerton College, University of Cambridge.
"Are you sitting Comfortably?"

9th August 2016. Invited Speaker for the Musicians Union
'Wellness for Musicians Month' Event,
Royal Welsh College of Music and Drama, Cardiff, Wales.
'Health and wellbeing for Musicians'

1st September 2016. Invited speaker. INSET Session. Music Masters & Mistresses Association (MMA).
Nottingham Girls High School

5th September 2016. Invited Speaker. INSET Session. Music Masters & Mistresses Association (MMA).
Godolphin & Latymer School, Hammersmith

27th September 2016. Invited Speaker. INSET session prior to Inaugural Residential Course National Youth Folk Ensemble - Cecil Sharp House, London.

29th October 29th 2016. Invited Speaker. Musicians Union National CPD Event.
Trinity LABAN, London
'Health Promotion in Music Teaching'

9th February 2017. Invited Speaker representing the Musicians Union, Music and Drama Education EXPO,
Olympia, London.
'How to Teach in a Healthy and Holistic Way'

24th February 2017. Platform Presentation. Wolfson College Research Event
Wolfson College, University of Cambridge

'Prevention of Playing Related Injuries in a Specialist Music School:
using Action Research to change Policy and Practice.'

15th March 2017. Invited Speaker. Music Scholars.
The Leys School, Cambridge.
'Health & Wellbeing for Musicians'

1st April 2017. Invited Speaker. National Youth Chamber Orchestra and National Youth Wind Ensemble Residential Courses.
Queenswood School, Hertfordshire.

1st April 2017. Rolling Powerpoint Presentation. PhysioFirst Conference 2017
Nottingham University Conference Venue
'Prevention of Playing Related Injuries in a Specialist Music School: using Action Research to change Policy and Practice.'

19th April 2017. Invited Speaker. British and Irish Modern Music (BIMM) Institute, Brighton. Sussex.
'Health & Wellbeing for Guitarists'

12th May 2017. Delegate. Safeguarding and Best Practise Conference
The Purcell School for Young Musicians,
Bushey, HERTS.

17th June 2017. Platform Presentation, Doctorate of Education Conference.
Faculty of Education, University of Cambridge, Cambridge
'Prevention of Playing Related Injuries in Young Musicians: using Action Research to Change Policy and Practice Locally and Nationally'.

22nd August 2017. Invited Speaker representing BAPAM.
International Chamber Music Summer School,
Oakham School, Rutland.
'Health and Wellbeing for Musicians' .

16th September 2017. Masterclass: Staff of the Royal College of Music,
Junior Department, Royal College of Music, London.
'Heathy Working Practices for Young Musicians'

11th October 2017. Workshop led by Dr Bronwen Ackermann.
English National Opera, The Coliseum, London.
'Healthy Musicians Workshop for the Orchestra of English National Opera'

3rd November 2017. Invited Speaker. Healthy Conservatoires Network Meeting
Royal Northern College of Music, Manchester.
'Injury Prevention in a Specialist Music School'

10th & 11th November 2017. Poster Presentation. PhysiotherapyUK, 2017.
Chartered Society of Physiotherapy Annual National Conference,
Birmingham.

'Prevention of Playing Related Injuries in a Specialist Music School: Using Action Research to Influence Policy and Practice'

24th November 2017. Invited Speaker. Music Mark Annual Conference,
Kenilworth, Warwickshire.
'Injury Prevention and Health Promotion in Young Musicians'.

6th March 2018. Tutor on behalf of BAPAM.
Institute of Contemporary Music Performance, London.
'Ergonomics for Musicians' (Performance Masters Students).

8th March 2018. Tutor on Behalf of BAPAM, MSc Performing Arts Medicine,
Institute of Sport, UCL, London.
'Rehabilitation of Young Musicians'.

29th March 2018. Poster Presentation. Dutch Performing Arts Medicine Association – Symposium.
Scheveningen, The Hague, Holland.
'Prevention of Playing Related Injuries in a Specialist Music School:
Using Action Research to Influence Policy and Practice'.

31st March 2018. Tutor - National Youth Chamber Orchestra, National Children's Wind Sinfonia and National Youth Wind Ensemble Residential Courses,
Queenswood School, Hertfordshire.

1st and 2nd April 2018. Tutor - National Children's Orchestra Residential Course.
Sherbourne Girls School, Dorset.
'The Musical Athlete'

9th April 2018. Participant - Focus Group Meeting.
Cecil Sharp House, London
Review of first 2 years of National Youth Folk Ensemble

15th April 2018. Tutor. The Piano Teachers Course – European Piano Teachers Association.
The Purcell School for Young Musicians, Hertfordshire.
'Injury Prevention for Young Pianists'.

28th June 2018. Panellist. Learning and Teaching Conference.
The Royal Northern College of Music, Manchester.
'How can we support transitions into and out of the Royal Northern College of Music?'.

13th - 20th July 2018. World Conference of the International Society of Society of Music Education.
The National Conservatory, Baku, Azerbaijan.

1. Workshop Presentation: 'Are you sitting comfortably? – top tips for orchestral musicians'
2. Poster Presentation: 'Prevention of Playing-related Injuries in a Specialist Music School: Using Action Research to Influence Policy and Practice'.

21st July 2018
UCL Performing Arts Medicine Study Day,
Institute of Sport, UCL, London.
Poster Presentation 'Prevention of Playing-related Injuries in a Specialist Music School: Using Action Research to Influence Policy and Practice'

21st August 2018. Invited Speaker on behalf of BAPAM
International Chamber Music Summer School.
Uppingham School, Rutland

27th October 2018. Invited Speaker.
Trinity Laban, London.
Musicians Union CPD Event,

28th October 2018. Tutor.
The Piano Teachers Course – European Piano Teachers Association.
The Purcell School for Young Musicians,
Hertfordshire.

Appendix B

Common principles emerging as good practice in the prevention of strain injuries in specialist Music/Dance Schools and Conservatoires

International Performing Arts & Medicine Association Conference July 2007

Common Principles emerging as good practice in the prevention of strain injuries in specialist Music/Dance Schools and Conservatoires

Summarised below are some of the 'common principles and initiatives' emerging from the July 2007 Performing Arts & Medicine Association Conference as being important, or even essential to the reduction of strain injuries in specialist Music (and Dance) training. These are derived both from evidence-based papers given by doctors/surgeons/physical therapists, and from discussion groups formed during the Conference, centring around the physical well-being of students at specialist music/dance institutions. First is a summary of the principle points emerging, followed by a brief objective account of some of the discussion which took place.

Summary

1. Having a Physical Therapist/Physiotherapist quickly and easily available for student consultation and in regular attendance at specialist institutions
2. Raising the awareness of students to factors which can cause/increase vulnerability to strain injury
3. Maintaining general levels of student fitness, both for physical and psychological wellbeing
4. Recognition of psychological stress as an important factor in raising susceptibility to pain/strain
5. Recognition of the role of Counsellors and Psychologists, both in the reduction of mental stress, increasing motivation & confidence and reducing performance anxiety
6. Having a *range* of physical/relaxation therapies readily available to students
7. Importance of respecting any short term rest periods advised by a medical expert
8. Increasing access to medical tools (such as EMG and Ultrasound) which raise awareness and increase the precision of information about muscle recruitment patterns for both teachers and students.

1. **Having a Physical Therapist/Physiotherapist regularly and easily available for consultation in any institution which is making high level physical demands on its students is essential to facilitate rapid and precise diagnosis and treatment of musculoskeletal problems.**

Considered equally important is the broader role of an 'in house' physiotherapist in *prevention* of injury *vis*;

- Physical assessment of all students entering the institution, with regular follow up as an integral part of the curriculum.

- Drawing the attention of to the institution and instrumental professor/s to students with possible susceptibility to strain injury (eg due to hypermobility/congenital pre-disposition/previous injury/pre-existing medical condition).

- Providing information (via workshops/sessions with particular instrumental/age groups) concerning good physical wellbeing, exercise strategies, practice strategies and postural issues.

- Collaborating with members of the instrumental faculty
eg sitting in on occasional one-to-one lessons to observe particular musculoskeletal issues association with particular instruments; working with teachers of vulnerable/injured individuals to ensure good practice and posture initiatives; giving workshops or initiating discussion sessions to inform teachers about musculoskeletal issues associated with performance and practising.

(Much discussion took place concerning the importance of co-operation between physical therapy/physiotherapy/physical exercise 'departments' – the latter referring more to schools than conservatoires - and the instrumental faculty; the perception amongst physical therapists is that instrumental teachers traditionally prescribe 'too many hours' of practice without thought as to the physical impact this may have on their students in the longer term. *Sic* –the instrumental faculty tend to under-estimate the importance of physical exercise. *Sic* – that training of instrumental teachers is inadequate in terms of physical understanding/anatomical knowledge. Physical Therapists/Physiotherapists feel that the advice given by Professors as to how to break up/rationalise practice time is not always sufficient to guard against strain injuries – particularly 'overuse syndrome'. Traditionally instrumental staff are not thought to understand the appropriateness of short breaks/stretching, nor the importance of physical exercise and encouragement of 'non-physical' styles of practice eg aural visualisation etc – ie types of practice that can be done without actually playing the instrument. Too much emphasis is put on 'number of hours' over and above quality of practice, and musculoskeletal care. However, physical therapists also acknowledge absolute respect for instrumental professors' knowledge of instrumental technique, and the necessity that any treatment they suggest never interfere/contradict the instrumental teaching – hence the importance of co-operation and collaboration between depts.)

2. **Generally raising awareness of the student community to factors which can cause/increase vulnerability strain injury** (potentially integrated into the role of the 'in-house' physiotherapist)

   - Poor playing position
   - Poor practice strategies:
     - too many hours demanded
     - too much time practising without a break *(one or two minutes off in every 20-30m of practice can significantly reduce susceptibility to strain injury)*
     - importance of 'warm up' and 'warm down':
     (warm up should particularly avoid 'pyrotechnics'; importance of easing muscles into activity, particularly those which will then be used repeatedly during the practice session.)
   - Carrying bags/instrument cases which are too heavy, carrying bags asymmetrically, or inappropriately; not considering the structure of bags and instrument cases
   - Lack of physical exercise

3. **The crucial importance of maintaining general levels of fitness, both for physical and psychological wellbeing.**

   Much discussion took place as to appropriate types of sport for musicians - swimming/walking generally being acceptable. There was much debate over contact sports, especially ones involving catching a ball, which were cited by Bill Dawson (hand surgeon and Chairman of PAMA) as the single most common cause of hand injury. So the appropriate type of exercise is considered as crucial as the necessity for the integration of exercise into a music/dance student's curriculum.

4. **Recognition of psychological stress as a factor in raising susceptibility to pain/strain.**

   Central to this was what was described as 'humanising' the learning process; finding strategies to reduce competitive/negative/stressful thoughts amongst students. Particularly interesting was a paper by dancer/dance psychologist Thomas Hecht highlighting the importance of understanding emotions associated with high level performance; accepting that a small amount of pre-performance anxiety/negativity is not necessarily to be avoided but can actually be performance enhancing; emphasising the crucial importance that teachers understand the psychological impact of their choice of words and body language in critiquing their students.

5. **Importance of the role of Counsellors and Psychologists**

   Recognising that psychologists could and should have a role in specialist/high level music/dance performance in the same way as Sports Psychologists are

accepted as part and parcel of high level sports training. A case in point was cited at Ohio State University: music students attending an optional 'elective' run by a sports psychologist (but directed towards musical performance) consistently performed better in concerts/competitions. After initial scepticism, the class became popular, and an accepted part of curriculum.

6. **Importance of having a *range* of physical/relaxation therapies available to students**

   Students respond differently to different types of physical/mental support; hence the importance of accessibility to Yoga,/Feldenkrais/ Meditation/Tai Chi/Pilates etc *in addition to* Alexander technique, which already has wide acceptance, and Physiotherapy.

7. **Importance of respecting any short term rest periods advised by a medical expert.**

   Much discussion took place about the appropriate 'time away from performance' for particular types of injury; current thinking is that asking a musician to stop playing should be a last resort (evidence that it causes depression & other psychological problems), and that the shortest possible time off necessary for recovery be recommended. But, by the same token, if medics are prescribing 'shortest possible time off', there is an absolute necessity that musicians/dancers respect this. It is therefore particularly essential for there to be co-operation between doctors/physical therapists and instrumental teachers/ students on this issue.

8. **Increasing role of medical diagnostic tools eg Electromyography and Ultrasound to provide objective and more detailed muscular information for instrumental teachers/students.**

   Ultrasound is still generally only available through hospital/physio/sports injury clinics and necessitates students going 'off premises', but can provide detailed information, for example, about 'core' muscle activity.

   Portable EMG units are relatively inexpensive (under £1000), and attached to a computer can provide real-time analysis as well as statistical analysis of muscle recruitment patterns. Relatively little medical training is needed to inform musicians as to how to use an EMG unit and how to interpret the results. The information it provides can highlight unexpected, inappropriate, or aberrant muscle recruitment patterns, which could be causing, or have the potential to cause strain injuries. It can, and has, been used in musicians' referral clinics, but has now been tried on a more regular basis within the Purcell School, UK, and on a workshop basis at the Royal Academy, London.

APPENDIX C

i An example consent form used at the school

ii Ethics Review Checklist for Faculty of Education

Consent form for participation in:

This project forms part of a piece of Action Research being carried out by Sarah Upjohn, the specialist physiotherapist at the Purcell School.

The research is towards a Doctorate of Education degree, and is being supervised by Dr Pam Burnard, Reader in Education at The University of Cambridge.

It is being undertaken using guidelines from 'Ethical Considerations for Educational Research' published in 2011 by the British Educational Research Association (BERA)

The Action Research aims to develop health promotion, injury prevention and performance wellness in pupils at The Purcell School.

Signing this form shows that

- I have explained to you what this project involves and I have answered any questions that you have
- You understand what is required of you during this project
- You understand that the findings and results are likely to be shared at national and international conferences and published in academic journals.
- You understand that measures will be taken to hide your identity and maintain your anonymity, except if photos or video are used to enhance or illustrate findings. In this instance your consent to use specific images will be obtained
- You agree to participate in this project

Please sign your name:.....

Please print your name.....

Date.....

You are under no obligation to participate in this (or any other) project, and you are free to withdraw from the project at any time, without any repercussions.

Signature of researcher.....**Date**.....

Sarah Upjohn
e.mail: spu@cam.ac.uk
The Purcell School for Young Musicians

RESEARCH ETHICS REVIEW CHECKLIST
FOR FACULTY OF EDUCATION

Question: Who needs to complete this checklist?
Answer: Any student or member of staff on the Faculty of Education's payroll who is planning to undertake research involving the collection of information from children, young people, teachers or other adults working in educational organisations, parents and other human subjects.
Note: Do not fill in this form if you are already completing the Cambridge University Psychology Research Ethics form

The Faculty's Three Stages of Ethical Clearance

Stage 1 involves you in completion of this Ethics Review Checklist. This is the first stage of three. It will help you (and others) decide to what extent you need to become involved in the second and third stages. When you have completed it you (and the Faculty) will be in a position to make this judgement.

Stage 2 will involve you in discussing any ethical dimensions of your research in some depth with another 'knowledgeable person of standing'; this is a very likely outcome of completing the checklist. Further details are provided on page x.

Stage 3 will involve you in obtaining formal 'ethical clearance' through the Faculty of Education's procedures; some projects will need to proceed to this stage. Further details are provided on page 6.

Details of the Project

Project Title: Injury Prevention, Health Promotion, and Performance Wellness in elite young instrumental musicians

Name of Researcher: SARAH UPJOHN at a Specialist Music School

Position in Faculty: undergraduate student / PGCE student / Masters student / (Research Student) / Member of Staff

Email address: spu21@cam.ac.uk

Usual contact address: 24 TRAFALGAR ROAD, CAMBRIDGE CB4 1EU

Phone number: 07790 300781

Students Only

Course of study: Ed.D.

Supervisor's name PAM BURNARD

Supervisor's email: pab61@cam.ac.uk

Supervisor's contact address: Faculty of Education
184, Hills Road
Cambridge
CB2 8PQ

28/

All the questions on this checklist deliberately offer you just two answers ('yes' or 'no'). You will probably find that you can answer many of the questions unequivocally one way or the other. However, sometimes you may wish there was an 'it depends' response category. If you find yourself in this position, please give the answer which suggests that, at this preliminary stage, there might be an ethical issue requiring more discussion at Stage 2.

Code of Practice relating to Educational Research

1a) Have you read the *Revised Ethical Guidelines for Educational Research* (2004) of the British Educational Research Association (BERA)? (if you have not read it, the latest version is available at http://www.bera.ac.uk/files/2011/08/BERA-Ethical-Guidelines-2011.pdf YES

1b) Is this Code relevant to the conduct of your research? YES
If you have answered 'no', please briefly explain why:

1c) Do you agree to subscribe to the Code in carrying out your own research? YES

2) Are there any aspects of your proposed research which, in the context of BERA's Code of Practice, might give rise to concern amongst other educational researchers? NO
If you have answered 'yes', please briefly list possible causes for concern below:

a)

b)

c)

Obtaining 'Informed Consent'

3) Are you familiar with the concept of 'informed consent'? (if you are not familiar with this concept you should first consult the following source: page 6 of the BERA guidelines above). YES

4) Does your research involve securing participation from children, young people or adults where the concept of 'informed consent' might apply? YES

If you have answered 'yes' to Question 4 above, please answer the following questions.

5a) Do you believe that you are adopting suitable safeguards with respect to obtaining 'informed consent' from participants in your research in line with the Code of Practice? YES

5b) Will all the information about individuals and institutions be treated on an 'in confidence' basis at all stages of your research including writing up and publication? YES

5c) Will all the information collected about individuals and institutions be presented in ways which guarantee their anonymity?

Yes - except use of Video/photos to enhance illustrations.
If individuals can be identified Permission from them and their parents or Guardians will be obtained

The Involvement of Adults in the Research

6a) Will your research involve adults? YES

If you have answered 'yes' to Question 6a above, please answer the following questions; otherwise move to Question 7.

6b) Will these adults be provided with sufficient information *prior* to agreeing to participate in your research to enable them to exercise 'informed consent'? YES

6c) Will the adults involved in your research be in a position to give 'informed consent' themselves with respect to their participation? YES

6d) Will these adults be able to opt out of your research in its entirety if they wish to do so by, for example, declining to be interviewed or refusing to answer a questionnaire? YES

6e) Will these adults be able to opt out of parts of your research by, for example, declining to participate in certain activities or answer particular questions? YES

The Involvement of Children, Young People and other potentially Vulnerable Persons in the Research

7a) Will your research involve children, young people or other potentially vulnerable persons (such as those with learning disabilities or your own students). YES

If you have answered 'yes' to Question 7a above, please answer the following questions; otherwise move to Question 8.

In educational and social research 'informed consent' regarding access is often given by a 'gatekeeper' on behalf of a wider group of persons (e.g. a head or class teacher with respect to their pupils, a youth worker working with young people, another person in an 'authority' position).

7b) Who will act as the 'gatekeeper(s)' in your research?
Please list their position(s) briefly below and, where this is not self-evident, describe the nature of their relationship with those on whose behalves they are giving 'informed consent'.

i) Headteacher - ₹
ii) Heads of Music Departments
iii) Head of Pastoral Care / Child Protection

7c) Will you be briefing your 'gatekeeper(s)' about the nature of the questions or activities you will be undertaking with the children, young people or other potentially vulnerable persons involved in your research? YES

7d) If another person (such as a teacher or parent of a child in your study) expressed concerns about any of the questions or activities involved in your research, would your 'gatekeeper(s)' have sufficient information to provide a brief justification for having given 'informed consent'? YES

7e) If unforeseen problems were to arise during the course of the research, would your 'gatekeeper(s)' be able to contact you at relatively short notice to seek advice, if they needed to do so? YES

7f) Could your 'gatekeeper(s)' withdraw consent during the research if, for whatever reason, they felt this to be necessary? YES

7g) Might other people consider that you yourself are the 'gatekeeper' for the research (e.g. projects involving gathering information from your own students or pupils)? YES

Other Ethical Aspects of the Research

8) Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (eg covert observation of people in public places) NO

9) Will the research involve the discussion of topics which some people may deem to be 'sensitive'? (e.g. sexual activity, drug use, certain matters relating to political attitudes or religious beliefs) NO

10) Does the research involve any questions or activities which might be considered inappropriate in an educational setting? NO

11) Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind? NO

12) Will blood, tissue or other samples be taken from the bodies of participants? NO

13) Is pain or more than mild discomfort likely to result from the study? NO

14) Could the research involve psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life? NO

15) Are there any other aspects of the research which could be interpreted as infringing the norms and expectations of behaviour prevailing in educational settings? NO

16) Are there any other aspects of the research which could be to the participants' detriment? NO

17) Will the study involve prolonged or repetitive testing? NO

18) Will financial inducements (other than reasonable expenses or compensation for time) be offered to participants? NO

What Further Steps to Secure Ethical Clearance are Required?
Please transfer your responses to all the questions to the grid below by ticking the appropriate boxes.

Question	1a	1b	1c	2
Yes	✓	✓	✓	
No				✓

Question	3	4	5a	5b	5c
Yes	✓	✓	✓	✓	
No					✓

Question	6a	6b	6c	6d	6e
Yes	✓	✓	✓	✓	✓
No					

Question	7a	7b	7c	7d	7e	7f	7g
Yes	✓	✓	✓	✓	✓	✓	✓
No							

Question	8	9	10	11	12	13	14	15	16	17	18
Yes											
No	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Interpretation of Results
If you have ticked any of the shaded cells above, then you should assume that further discussion involving Stage 2 procedures is required because some aspect of your proposed research is likely to be 'ethically sensitive'. In practice, many issues can be resolved at this stage.

Members of staff should be especially careful about research involving their own students (question 7g). *If you have ticked 'yes' in response to one or more of questions 8 to 18, both Stage 2* ***and*** *Stage 3 clearance will definitely be required.*

Stage 2 Clearance
Any 'ethically sensitive' responses identified above should be discussed with a 'knowledgeable person of standing'.

In the case of students within the Faculty, this person will, in almost every case, be the person supervising your research.

Members of Faculty staff will need to exercise some care in selecting such a person. S/he is likely to be someone with considerable experience of research in a cognate area to your own and quite likely to be one of the more senior members of the Faculty. S/he should not be someone who is also involved in the research nor should they be someone with whom you regularly collaborate (whether in relation to research, teaching or administration). The test, in every case, should be whether an outsider would judge the person chosen to be 'independent'.

On completion of the discussion, the 'knowledgeable person of standing' is asked to choose one of the following three responses, to delete the other two and to affirm their views by adding their signature.

a) I have discussed the ethical dimensions of this research and, as outlined to me, I do not foresee any ethical issues arising which require further clearance.

b) There may be some ethical issues arising from this research. I think it would be prudent for the researcher to seek further advice and, possibly, Stage 3 clearance.

c) Ethical issues arise in this research which require further discussion; my advice is that Stage 3 ethical clearance should be sought.

Student signature: ..... Date of discussion: 20/2/14

Signature of 'knowledgeable person of standing' ..... (Supervisor)

Lodging this form

It is your responsibility as the researcher to lodge this form with the appropriate person well in advance of undertaking your research.

Students should provide their supervisors with a copy which can be lodged with other papers their supervisors are keeping about their work. If Stage 3 clearance is required, supervisors will take steps to initiate these procedures.

Members of staff should lodge a completed copy of this form with the Secretary to the Director of Research. They should draw attention, albeit briefly in the first instance, to the nature of the issue(s) arising. The Director of Research will then advise on the appropriate Faculty procedures to be followed to enable the research to be considered for Stage 3 clearance.

Researchers should be aware that Stage 3 discussions could involve them in making modifications to their research design or proposed procedures and may, in certain circumstances, result in ethical clearance being withheld.

APPENDIX D

i Poster presentation at PhysiotherapyUK 2013 Conference

ii Article published January 2014, in UK Association for Music Education 'Music Mark' magazine

iii Example of 'The Bulletin'

An Audit of Playing Related Injuries in Elite Young Musicians

Sarah Upjohn MA MCSP

Doctorate of Education student,
Faculty of Education, University of Cambridge,
184 Hills Road, Cambridge, CB2 8PQ
Specialist Physiotherapist at
The Purcell School for Young Musicians,
Aldenham Road, Bushey, HERTS, WD23 2TS.

Introduction

I am the physiotherapist at The Purcell School for Young Musicians. It is funded under the government's music and dance scheme, and is a recognised centre of excellence. The school currently has 168 overseas and home pupils aged between 9 and 18. The majority of them are boarding at the school. The school is extremely successful at developing the musical talents of these pupils, measured by the numbers that progress to specialist music higher education establishments (colleges, universities and conservatoires) all over the world, and the success of its pupils in national and international competitions. This success is attributable to a number of factors:

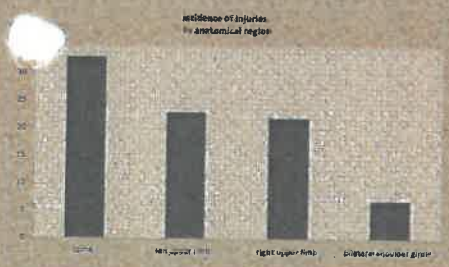
- The pupils are selected to enter the school after a stringent audition process,
- the instrumental teachers who work at the school are world class.
- The timetable is specifically designed to enable the pupils to practise for many hours each day, with designated practise time before academic lessons begin, during the school day, and during the evening.
- Instrumental lessons are timetabled throughout the week, and are prioritised above other aspects of the general curriculum.

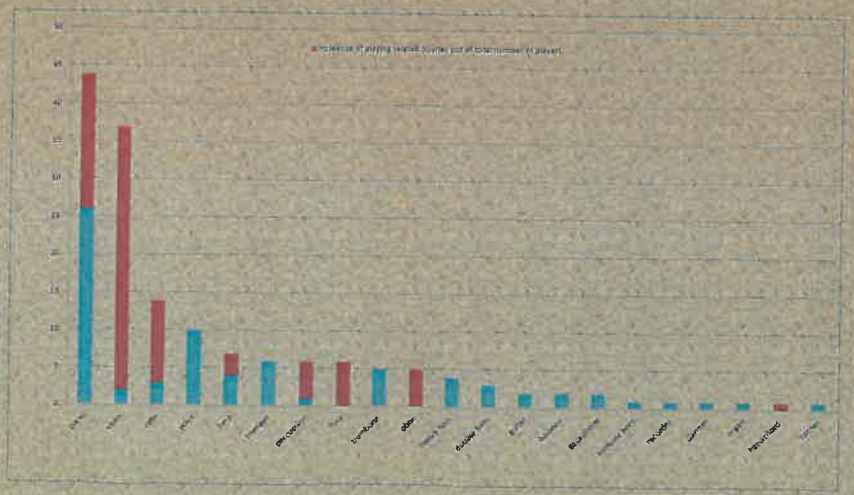
These are the results of an audit of physiotherapy assessments and treatment notes kept between October 2008 and December 2011. This now forms part of the baseline data for a piece of action research towards a Doctorate of Education at the University of Cambridge.

Percentage of Preventable playing related injuries

Risk factors for playing related injury

- Sudden increase in amount of time spent playing
- Introduction of new repertoire
- 'poor' posture
- Growth spurt
- Stress





Conclusion

Having established that 82 % of the playing related injuries are caused by overuse or are postural in origin, they can be considered to be preventable. Injury prevention and health promotion become the priority

The school year 2013-2014 sees the development and implementation of a health promotion and injury prevention strategy into the school. This will be both intra and extra curricular, involving boarding house staff, teaching staff, instrumental teachers, parents and pupils. As part of an action research process this will this will be regularly evaluated and will be organic in nature, being able to be both flexible and responsive, as necessary.

The outcome will be measured by interviewing pupils and staff, and by auditing physiotherapy records.

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Editorial

NLP CURRENT STATE/DERSIRED STATE.

Some thirty years ago HMI announced that what music we teach is only slightly more important than how we teach it, a sentiment often repeated since. The what, how, where, when, who and why of music education serve to focus the mind on the values we hold to and ultimately on what we believe the significance of music-making to be. For Wayne Bowman, distinguished philosopher of music education writing from Canada, this is an ethical question and related to what kind of person is it good to be. In *The ethical significance of music-making* Wayne challenges the lazy thinking about music education that we so easily fall into. Equally challenging is Mary Earl's short story making a case for viewing our musical practices as worldly, contested, value laden and, ultimately, political, while Hannah Dunster's *The art of facilitation* makes clear a distinctive set of values underpinning practice. From East Cheshire Jonathan Savage likewise draws attention to the way The Love Music Trust is bound and inspired by its founding principles.

Ten years of Musical Futures are celebrated by Abigail D'Amore, serving as a prelude to a second contribution from North America detailing an action research project investigating informal practices in the early years. Not unconnected are articles about the art of sampling in supporting young people's music-making and the second part of Andrew Lindley's reflections on musical identity.

Across the phases comes Caroline Morris's report on an Early Years project, Louisa Roberts's reflections on the reality of primary music leadership, Emily Crowhurst's resourcefulness with Year 7, whole class instrumental learning within a general programme of music education, and the third GCSE worksheet from Jennie Francis. A different kind of 'who' is a practising physiotherapist, with an article of particular interest to instrumental teachers.

This is our last issue as editors and we thank everyone for their support, especially those who have ensured that we were never short of copy! We hope Matilda Egere-Cooper, the incoming Publications and Communications Co-ordinator, will gain as much enjoyment as we have.

John Finney and Lis McCullough

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Playing related injuries in elite young instrumental musicians: A physiotherapist's perspective

– Sarah Upjohn

This is a presentation of the results of an audit of playing related musculoskeletal injuries sustained by pupils in a specialist music school. It shows which part of the body sustained most frequent injuries, and which instruments generated the most injuries. Risk factors for playing related injury are clearly identified. The implications for instrumental teachers are discussed, and suggestions for targeted injury prevention strategies are made.

Introduction

I am the physiotherapist at a specialist school for elite young musicians. This article is based on the result of an audit of playing related musculoskeletal injuries sustained by pupils between October 2008 and December 2011. In addition to detailing injuries related to different instruments, it clearly revealed risk factors for playing related injuries. This has enabled targeted injury prevention advice to be developed.

The school has about 170 pupils aged between nine and 18. Most pupils board at the school and many are international, coming from South East Asia, Europe and Eastern Europe. The majority of them progress to continue studying instrumental playing at conservatoires in the UK and overseas. The school curriculum and timetable are designed so that each pupil has an individually tailored programme of study. This includes instrumental lessons, practice time and performance opportunities as well as academic education. Instrumental practice sessions are timetabled throughout each day in order to enable the pupils to put in the many hours of practice required to develop expertise in instrumental playing. My role was established in response to the *Health Promotion in Schools of Music Project*, which was set up in 2004 and which, in September 2006, published a number of declarations and recommendations for action (Chesky, Dawson & Manchester 2006). Amongst these was the statement that 'performance injuries are preventable' and it recommended that a health promotion framework be adopted by educational establishments that are training musicians. This idea reinforces work by Spahn et al. (2002), who identify a strong indicator for the need for health promotion courses to be taught to music students. This is supported by work in 2004 which identified a higher prevalence of health problems in music students compared with other students, and suggested that prevention and health promotion measures, specifically tailored for music students, should be used (Spahn et al. 2004). Zander et al. (2010) found that playing related symptoms are already found in between 25% and 79% of university level student musicians. These were found to be predominantly caused by overuse endured by certain body parts. This highlights the need for injury prevention programmes aimed at pre-conservatoire level students. I began working in the school in October 2008. My role as physiotherapist at the school is to advise on the management of, and to treat, a variety of playing-related musculoskeletal injuries. These are injuries to soft tissue structures (muscles, tendons, ligaments and nerves) sustained as a direct result of instrumental playing.

Emergent findings from an audit of physiotherapy treatment records between October 2008 and December 2011

In accordance with guidelines set out by the Chartered Society of Physiotherapy (the professional body for physiotherapists working within the UK) and regulations set out by the Health and Care Professions Council (the UK registration body for professions allied to medicine), full and comprehensive notes were written about each pupil seen for physiotherapy. These notes contain an initial assessment of the problem, including details of the onset, and then include details of treatment, progress and outcome. An audit of these records has revealed details about the incidence of injuries for each instrument (see Fig. 1); about which parts of the body became injured most frequently (Fig. 2); and about whether the injuries were chronic, acute or recurrent (Fig. 3). The emergent findings also clearly identify five risk factors for playing-related injury, and this allows us to consider implementation of targeted injury prevention strategies (Fig. 4).

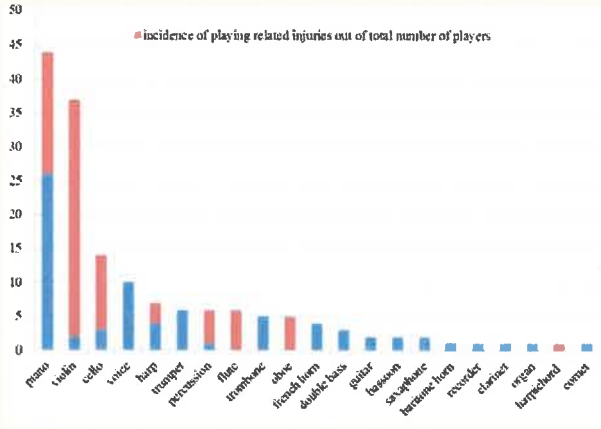

Fig. 1 Incidence of playing related injuries out of total number of players per instrument

The figures do not represent the number of players injured per instrument (Fig. 1), as some pupils had more than one injury, or a recurrence of the same injury, but they provide a useful illustration of the level of incidence of injury per instrument.

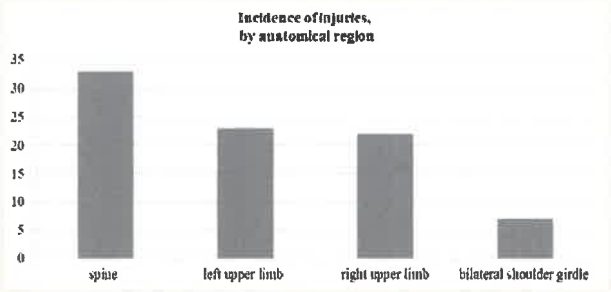

Fig. 2 Incidence of injuries, by anatomical region

For the purpose of this audit, the spine describes the area from the base of the skull to the base of the pelvis, the upper limb describes those structures situated between the shoulder joint at the top of the arm, and the ends of the thumb and fingers, and the shoulder girdle describes the area between the neck and the top of the arm (see Fig. 2).

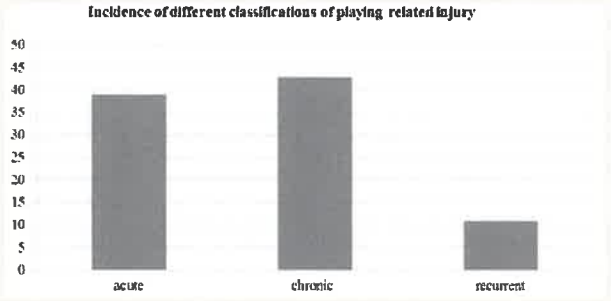

Fig. 3 Classification of injuries

Acute injuries (Fig. 3) are characterised by a rapid onset after a specific incident. They have every chance of healing given the right circumstances. If an acute injury is not given the opportunity to heal, it can become a chronic injury. These are usually low grade injuries that 'grumble on', causing persistent pain and dysfunction. These are much more resistant to treatment. Recurrent injuries are repeated episodes of an acute injury.

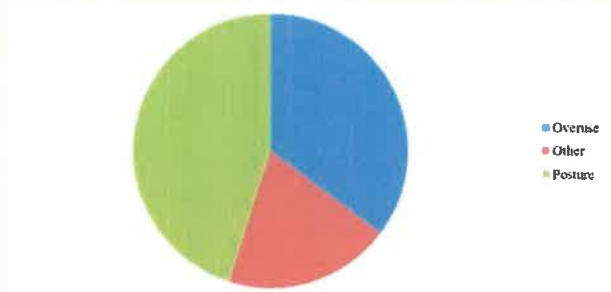

Fig. 4 General triggers for playing related injuries (October 2008 – December 2011)

The pie chart (Fig. 4) shows that the majority (82%) of the injuries were either postural in origin (46%) or were caused by overuse (36%). This finding is echoed by Kreutz et al. (2008) who reported from two UK conservatoires that playing related musculoskeletal pain was common, and that significant proportions of health problems among music performance students emerge from such factors as posture and fatigue, rather than being specific to the instrument played.

The 18% of injuries not related to posture or overuse originated from a variety of factors including stress, change in biomechanics due to a rapid growth spurt, carrying percussion instruments, hypermobility syndrome or pre-existing pathology.

It is clear that the playing related injuries at the school are predominantly caused either by overuse of soft tissue structures (simply put, playing too much without sufficient opportunity to rest and for recovery to take place) or by playing with posture that places adverse biomechanical loading on soft tissue structures and joints, inevitably causing eventual dysfunction and usually resulting in pain (Culf 1998). The severity of the injuries seen at the school ranged from inconvenient to career ending.

Overuse injuries: Overuse injuries typically occur when someone carries out a repetitive task frequently and over a sustained period of time. There are many synonymous terms used to describe overuse injuries (repetitive strain injuries, cumulative trauma disorder, occupational overuse syndromes, work related upper limb disorder), but all describe the scenario of increasing pain in muscles, ligaments, tendons or nerves and gradual loss of function. Commonly seen in computer users or factory workers on a production line, they are also seen in instrumental musicians. For instrumental musicians, tiny movements make a significant difference to function and ability to play, and a relatively minor overuse injury can have a significant and devastating effect on playing ability.

Posture: Posture related aches and pains arise when habitual postures or movements place an adverse load on anatomical structures such as muscles, joints, tendons and ligaments. This results in pain. Postures that we adopt when performing familiar tasks are habitual and subconscious and,

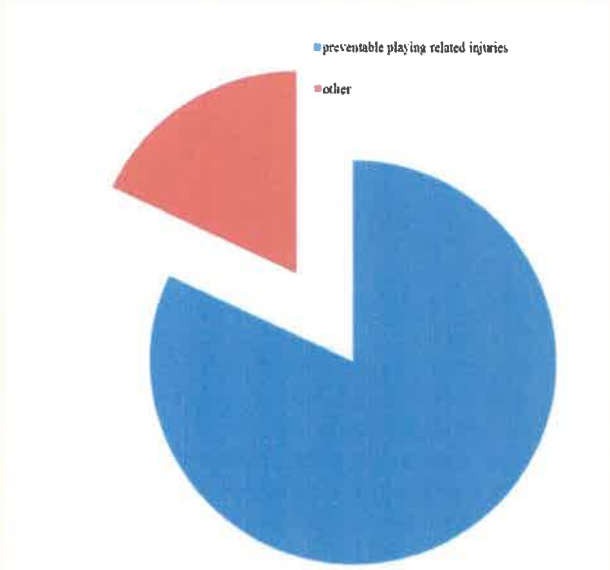

Fig. 5 Preventable playing related injuries

typically, we often have no idea of our posture, nor of the positions or movement patterns that we are using. Many instruments place us in positions of asymmetry, increasing the risk of eventual postural pain.

Both overuse injuries and postural dysfunction are, by definition, preventable (see Fig. 5).

Major risk factors for injury

Five risk factors for the onset of playing related injuries clearly emerged from the audit (see Table 1).

Risk factors for injury in elite young instrumental musicians	
1	Sudden increase in playing time
2	Introduction of new repertoire
3	Posture
4	Growth spurt
5	Stress

Table 1

1. Sudden increase in playing time

Our pupils reported sudden increase in playing time in response to preparing for exams, competitions, auditions, concerts and assessments, and also during orchestral courses, when not only do they play for longer periods of time each day in a highly organised way, but players who usually stand to practise (for example, violinists, viola players, and woodwind players) sit to play. This places unfamiliar demands on the body. The body of knowledge from sports science about the way the body adapts in response to training is useful here. The SAID principle (Specific Adaptation to Imposed Demands) asserts that the human body adapts specifically in response to demands imposed on it. For adaptation (or change) to occur, the body requires a stimulus (or a demand or a stress).

In response, specific biological changes occur in bone, tendons, muscles and ligaments, and also in the central nervous system. However if the demand is too high, or recovery time is insufficient, then adaptation can be inhibited, there can be a decrease in the capacity of the physiological systems, and a condition of 'over-training' arises. In athletes acute overtraining occurs when muscles are worked to exhaustion, while chronic overtraining can result in muscles becoming weaker. This adaptation to imposed demands and the subsequent risk of 'overtraining' applies whether we are talking about what a pupil can play, how they play it, and how long they can play for.

2. Introduction of new repertoire

While the introduction of new repertoire is frequent and necessary, practising new pieces that have new or unfamiliar technical demands can result in pain until adaptation to the new demand occurs.

Posture

Habitual posture that takes a person out of anatomical neutral (symmetry, head balanced above pelvis, and spine lengthened) places stress and strain on soft tissues and joints, and can result in pain.

Growth spurt

Our pupils are growing. This sets them apart from adult instrumental players. Some children and teens seem to grow slowly and steadily, and others have periods of rapid growth (growth spurts). When children grow rapidly, first the long bones grow, and then the soft tissues (muscles, tendons, and ligaments) accommodate to the new frame. Immediately after a growth spurt, muscles are relatively weaker, as they operate across a longer lever, soft tissues are less flexible, as they are stretched over a larger frame, and the child or teen may be less coordinated as their body map (the internal representation of themselves in their own sensory cortex) adapts to their new dimensions and new shape. Soft tissues are particularly vulnerable to injury immediately following a growth spurt, and this is not the ideal time to change to a larger or heavier instrument, nor to dramatically increase the amount of time spent practising, nor to introduce new technically demanding repertoire.

Stress

Our pupils become stressed for a variety of reasons. A few examples of common sources of stress are: concerns about family life, about friendships at school, about academic work, about musical progress, and about up-coming performances. Stress can increase tension in muscles and can change posture. This can increase vulnerability to injury. Stress can also interfere with sleep and lack of sleep can make students more vulnerable to injury for two reasons: 1) Sleep is restorative for the body, and inadequate sleep interferes with physical recovery; 2) Fatigue interferes with ability to concentrate, and technique can deteriorate.

Injury prevention in elite young instrumental musicians: Implications for instrumental teachers and parents

Having established that most playing related injuries are preventable, and having identified five specific risk factors for injury, we are now in a strong position to help our students to remain injury free.

Each one of us has a duty of care towards our pupils. The special relationship that can develop between a pupil and their instrumental teacher places the teacher in a position of particular power and responsibility. Part of this must include taking steps to minimise pupils' risk for injury. This can be done if the teacher has a working knowledge and awareness of individual risk factors and an appreciation of how risk increases if more than one risk factor is present (Table 2).

Steps towards injury prevention		
	Injury Risk	Be aware of:
1	Sudden increase in playing time	Q: How much playing is the pupil doing? Q: Has this increased suddenly? Q: Are they taking frequent breaks during practice sessions? Q: Are they doing stretches before playing and after playing?
2	Introduction of new repertoire	If the technical demands of a new piece are completely different from current pieces, then start slowly, and do small amounts at a time, until the body has accommodated to the new demands.
3	Posture	Q: Does the child play the violin, the piano, the cello, or the flute? These have the highest incidence of posture related playing related injury
4	Growth Spurt	Q: Is the child growing rapidly?
5	Stress	Q: Is the child feeling more stressed than usual?
How many risk factors are present?		

Table 2

It is useful to be mindful of these five major risk factors. In the following section I have provided more information about injury prevention relating directly to these five risk factors.

1. Sudden increase in playing time

Pupils often increase the amount of time spent practising when preparing for exams, auditions, competitions, assessments and concerts. This is wonderful, but sudden, large increases in amount of time spent playing can result in overuse injury, as muscles and tendons are not 'conditioned' to the increase in workload. A better approach is to gradually increase playing time, to allow soft tissues to accommodate to increase in demands. Increasing by 10% each week is generally safe, unless other risk factors for injury are present. Be mindful of the following questions:

Q: How much playing is the pupil doing?

Q: Has this increased suddenly?

Q: Are they taking frequent breaks during practice sessions?

The British Association of Performing Arts Medicine (BAPAM) recommends a maximum of 45 minutes playing before taking a 5-minute break.

Visualisation techniques are used in the field of sports science and are an effective strategy for rehearsing and improving motor skills. This is believed to be because they generate anticipatory signals that are understood to be the basis on which motor commands are organised (Fery & Morizot 2000). This scientifically proven technique for improving and consolidating motor skills could be used in instrumental practice, particularly when the pupil wishes to continue practising but risk factors for injury are present. You can suggest that the pupil practises by visualising the movement pattern that they are trying to perfect, and visualises the sound that they are trying to produce.

Q: Are they doing stretches before playing after playing?

Encourage your pupils to start thinking of themselves as musical athletes. The demands placed on the body by instrumental playing are high, and any instrumentalist's body needs to be in good physical condition to cope. Stretches of affected soft tissue structures before and after playing is useful.

2. Introduction of new repertoire

The SAID (Specific Accommodation to Imposed Demands) principle applies here too. Any new physical demand requires time for the body to accommodate.

Be aware of the technical demands of new pieces. If it is completely different from current pieces, then start slowly, limiting time spent on the new piece initially, and thoughtfully organising practice so that the new piece is played in the middle of a practice session, once the player is warmed up, and before they become fatigued.

Augment learning of a new piece by listening to recordings, and by sitting down with the music without the instrument, and thinking it through.

3. Posture

Q: Do your pupils play the violin, the piano, the cello or the flute?

These instruments produce the highest incidence of posture related injuries, and are worthy of special consideration:

Violin: Ensure that the shoulder rest and chin rest are adjusted as the child grows, to keep the head supported with the neck in a neutral position, and to prevent excessive shoulder girdle elevation.

Piano: Encourage the pupils to sit heavily on their 'sitting bones' rather than to sit 'up and off' their sitting bones. If your body weight is being supported by your spine, muscle tension is reduced as muscles are required to do less work to hold you up.

Cello: Ensure that the spike is adjusted as the child grows.

Flute: Pay particular attention to whether or not the pupil is excessively rotating the spine or shoulder girdle to position the flute.

Whatever the instrument, be aware of your pupils' posture as they play, and aim for them to be standing or sitting with their weight evenly distributed, and with their spine lengthened.

Alexander Technique lessons can be wonderful for increasing body awareness and changing posture.

4. Growth spurt

Q: Are your pupils growing rapidly?

Be aware that they may be less well coordinated (like a clumsy puppy), and their soft tissues will be particularly vulnerable to injury while they are relatively weaker, and relatively less flexible. This is not the right time to introduce complicated new repertoire, with new technical demands, or to change to a larger or heavier instrument.

5. Stress

Q: Are your pupils feeling more stressed than usual?

Be aware if something seems 'not quite right'.
Is it academic exam time?
Are they happy with home/school life?
Are they preparing for a major competition, concert, or assessment?

Advice for everybody

Pain: Pain is the body's way of alerting us that something is wrong: if something hurts STOP PLAYING. Apply an ice pack for 20 minutes as soon as it is convenient, and rest the affected area for 48 hours. Continue to apply ice for up to 20 minutes per hour for the first 48 hours.
If the pain returns once the pupil resumes playing, or persists despite stopping playing and applying ice, stop playing and SEEK MEDICAL ADVICE.

Fitness: Regular exercise can help reduce stress, and increase concentration. In addition to these benefits, improved strength, flexibility, cardio-vascular and respiratory endurance will all help with the significant physical demands of instrumental playing. Yoga, pilates, swimming, walking, jogging, running, are all safe, fun and hugely beneficial.

Conclusion

Playing related injuries are predominantly preventable. With understanding of the mechanisms of injury and with insight and overview of the physical and emotional demands placed on our pupils, in and outside the lesson and practice room, changes can be made when risk factors are present. We are in a position to enable our pupils to develop as musicians while remaining injury free.

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Sarah Upjohn is a specialist physiotherapist who works with instrumental musicians. She is studying for a Doctorate of Education at the University of Cambridge.

spu21@hermes.cam.ac.uk

The Purcell School
for young musicians

BULLETIN

Weekly Bulletin 23.03.18 No. 56

From the Head

Dear Parents,

As we reach the end of a hectic term, we all have powerful reasons for great satisfaction. The Cadogan Hall concert on Monday was exceptional even by the standards of The Purcell School. Former (2017) Purcellian Thomas Kelly gave a fantastic reading of the massive Brahms 2nd Piano Concerto, helped by our inspirational guest conductor Moritz Gnann. He was superbly supported by our Symphony Orchestra which also gave fantastic accounts of Wagner's *Meistersinger Overture* – and in Hindemith's spectacular Symphonic Metamorphoses which took on the character almost of a concerto for orchestra in the last couple of movements. If our young players relished those challenges, they also gave their all to the stunning world premiere of *Skyline* by Year 11 student Sasha Scott, under the direction of Purcell student Sebastian Kozub: it was something very special.

As if that wasn't enough at the end of term, on Thursday the Upper Sixth drama students gave their A level performances, and on Wednesday huge numbers of students contributed to the Sound, Image, Movement (SIM) concert. The concert was a new experience for me and one that was hugely enjoyable in many ways, not least the pleasure of witnessing music in styles and a setting very different from those I normally hear around the School, all of it assembled, rehearsed and performed by the students themselves. This gives an impressive additional angle to the creative work they undertake.

Congratulations to Year 12 student Gayatri Nair for winning through to the live semi-finals of ITV's The Voice, a huge achievement. And, if you want to know how our two category finalists got on in the BBC Young Musician of the Year Competition, you'll have to watch on television (BBC4, I suspect) on 6th April for strings and 20th April for woodwind.

It has been a joy and a privilege to step in as Interim Head at The Purcell School this term, and to see just how much our astonishing young musicians achieve – even more than I dreamed of. I look forward to seeing even more next term!

In the meantime, please make sure that your children have a great deal of rest over Easter. Exam candidates have a lot of revision, and musicians always have practice to do, but this three week holiday does need to provide all our students with time to recharge their batteries.

I wish all of you a happy Easter and holiday.

With all good wishes,

Dr Bernard Trafford, Interim Head
@bernardtrafford

Coming Up

Chamber Ensembles
Coffee Morning Concert
Saturday 9th June, 11:30
Wigmore Hall, W1U 2BP
An hour-long concert, featuring some of our very best chamber ensembles. Tickets are available from the Wigmore Hall website here.

Freddy Morgan Piano Recitals
Monday 25th June, 19:45
Purcell Room, Southbank, SE1 8XX
Short recitals given by talented young Purcell School pianists, selected by audition. Tickets will be available in April from the South Bank Centre website here.

Choirs and Orchestras of The Purcell School
Thursday 5th July, 19:30
Duke's Hall, RAM, NW1 5HT
An all-Stravinsky programme, including his *Mass*, *Pulcinella Suite* and *Symphony of Psalms*. Conducted by Edward Longstaff. Tickets are £15 and available from The Purcell School on 01923 311109.

Reminders

Interim Grade Reports
Interim grade reports for Years 6, 7, 8, 9, 10 and 12 are available to view on the SLG. Full academic reports for Years 11 and 13 can be viewed from next week.

Study Leave and Revision
Parents of students in Years 11 and 13, Mr James Harding has written to you by email with information about study leave and revision.

Appendix E

Department of Health

Physical Activity Guidelines for Children and Young People

(aged between five and eighteen)

FACTSHEET 3

Physical activity guidelines for

CHILDREN AND YOUNG PEOPLE (5–18 YEARS)

1. All children and young people should engage in moderate to vigorous intensity physical activity for at least 60 minutes and up to several hours every day.
2. Vigorous intensity activities, including those that strengthen muscle and bone, should be incorporated at least three days a week.
3. All children and young people should minimise the amount of time spent being sedentary (sitting) for extended periods.

Individual physical and mental capabilities should be considered when interpreting the guidelines.

Examples of physical activity that meet the guidelines

Moderate intensity physical activities will cause children to get warmer and breathe harder and their hearts to beat faster, but they should still be able to carry on a conversation. Examples include:

- Bike riding
- Playground activities

Vigorous intensity physical activities will cause children to get warmer and breathe much harder and their hearts to beat rapidly, making it more difficult to carry on a conversation. Examples include:

- Fast running
- Sports such as swimming or football

Physical activities that strengthen muscle and bone involve using body weight or working against a resistance. Examples include:

- Swinging on playground equipment
- Hopping and skipping
- Sports such as gymnastics or tennis

Minimising sedentary behaviour may include:

- Reducing time spent watching TV, using the computer or playing video games
- Breaking up sedentary time such as swapping a long bus or car journey for walking part of the way

What are the benefits of being active for at least 60 minutes each day?

- Improves cardiovascular health
- Maintains a healthy weight
- Improves bone health
- Improves self-confidence
- Develops new social skills

For further information: *Start Active, Stay Active: A report on physical activity for health from the four home countries' Chief Medical Officers* (2011)

DHSSPS Department of Health, Social Services and Public Safety www.dhsspsni.gov.uk

The Scottish Government

Llywodraeth Cymru Welsh Government

DH Department of Health

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Appendix F

Health and Fitness Working Group

Report

Appendix F Health and Fitness Working Group Report

Health and Fitness Working Group Report. January 2013

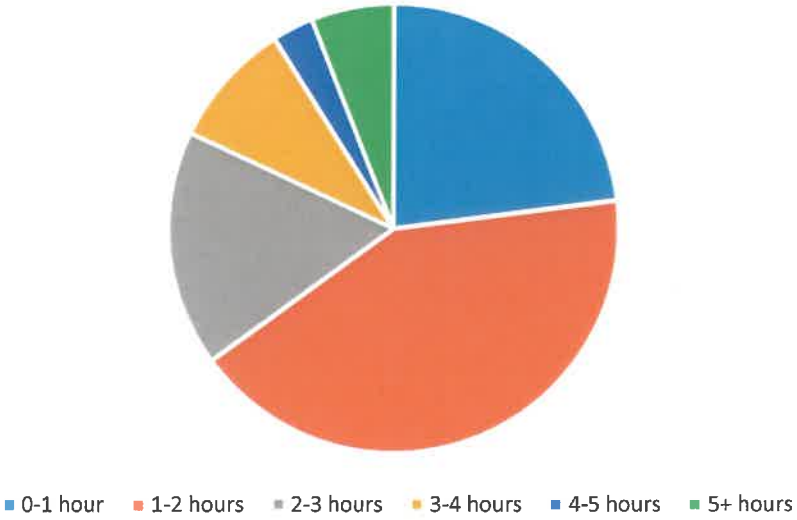
The report is based on information from a questionnaire which was distributed to all students, and on discussion within the working group. 65 students returned questionnaires. There were only 10 returned by 6th formers (8 girls and 2 boys). The questionnaires looked into three main related areas: physical fitness, diet and mental health. The group focussed on the needs of students but in retrospect it might have been relevant and useful to consider the matter in relation to staff. Attached to the report are pie charts and a table of the findings. The main finding will be summarised here.

Physical Fitness

In terms of what the school offers, currently Juniors receive 2 hours 20 minutes of PE and Years 7-11 have 1 hour 10 minutes. This is below the minimum statutory requirement of 2 hours per week for the entire age range, who should also have the option of an additional 5 hours of PE offered. School PE facilities are limited and rather basic. The gym is under-equipped, old and in need of replacement or refurbishment. There is a football pitch and sports fields for general use.

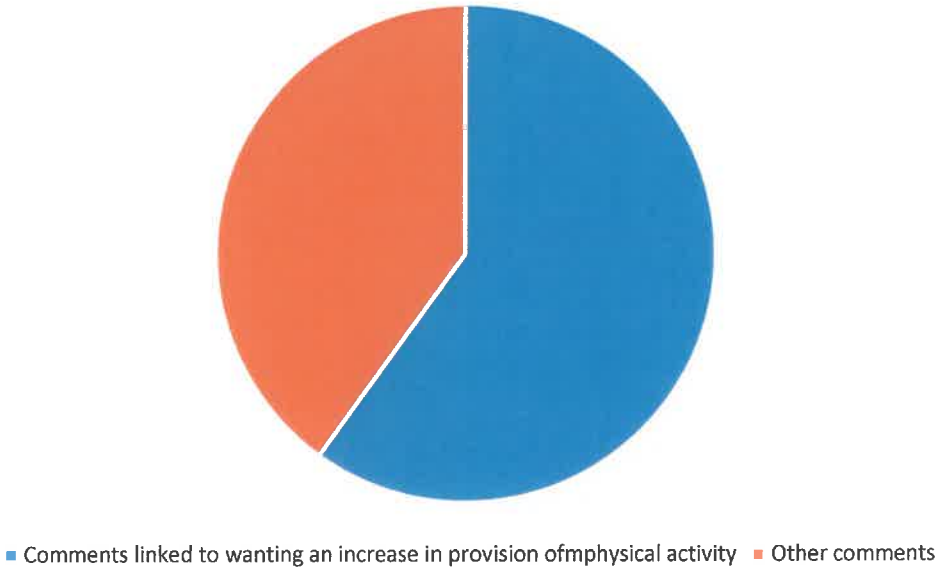
The questionnaire indicated that all students do some PE every week. 65% do up to 2 hours in school and 46% do 1-3 hours out of school. But there were a significant number who it was felt had very little exercise. An astounding 71% of students feel that there is not sufficient focus on health and fitness within the school. 60% of respondents gave answers indicating a desire for increased provision of physical activity in school. Students were asked about activities they would like to be offered by the school. Some mentioned activities that are already available (table tennis, swimming, football and yoga), suggesting that these should be more widely promoted. There was interest in a wide range of interests, including ice-skating, adventure activities, team sports (hockey, rugby), athletics, racket sports, cycling and hiking. It was clear that as musicians, some students (63%) were concerned about the risk of sustaining an injury through sport and more vigorous exercise, and only about one third felt that there were no possible negative effects from this. Most students (86%) recognised the benefits of regular exercise in relation to their music. These included linking physical activity to increased strength, improved posture, improved breathing control and stress reduction. Some students also referred to the positive effects physical exercise can have on the mind.

How many hours of physical activity, including timetabled games lessons, do you do each week in school?



Is there enough sport, health and fitness related activities in the school?

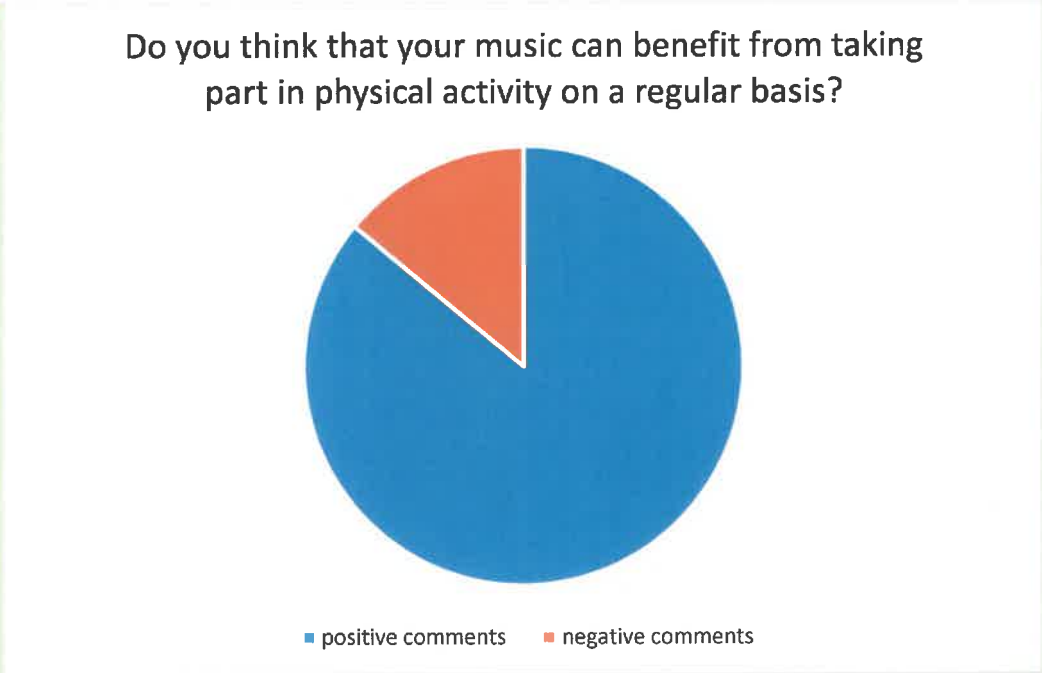
Is there anything that the school could offer to help improve your health, fitness and diet?



Do you think that taking part in physical activity can have any negative effects on aspects of your (musical) performance

Some of the pupils expressed apprehension about the possibility of sustaining a sports injury that may affect their ability to play their instrument.

Some feel that time spent on physical activity detracts from instrument practice time



Despite the pupils concerns about the negative effect on their music of taking part in physical activity, in an apparently contradictory stance, a vast majority of the respondents think that their music can benefit from taking part in physical activity on a regular basis.

When introducing more physical activity we must ensure that the pupils feel safe and feel that risk has been minimised. There are many activities, such as dance, swimming, running and walking which carry very little risk for hand or upper limb injury, compared to some ball sports such as cricket

Mental Health

Mental health is a key issue and the symptoms of disorders are not always recognised. There was some focus in the group on this aspect of health and a specific question in the questionnaire. Students were asked to give an example of being mentally healthy. Responses suggest that there is some awareness among students. There were examples such as 'being mentally stable, or 'comfortable in your state of mind and stable' and 'you are happy and not depressed or worried' to indicate this. Some responses focussed on more extreme mental health issues such as 'feeling non-suicidal', 'not being insane' and 'not mentally falling apart'. With regard to the current situation, the school has a visiting school counsellor and each student is assigned a personal tutor with whom they meet regularly. There are also independent listeners students can contact. Anti-bullying and child protection policies are in place with the

aim of protecting students from being subjected to mentally or emotionally damaging experiences. There are guidelines to inform us of how we should relate to one another within the school.

The state of an individual's mental health is determined by how safe, cared for protected, valued and accepted they feel. The working group discussed how the school as an institution has a responsibility to ensure that it provides an environment for both staff and students conducive to such needs. It was generally felt that more should be done to help students deal with emotions. For Year 11 and above there could be a general studies time to deal with mental and emotional health, to help them get out of an emotional cycle. Pupils could be taught how to relax, use their breathing to relax and gain control of situations and to learn how to be positive, replacing negative thoughts with more positive ones. This would help with examination and performance anxieties. Helping pupils with their mental and emotional health might also address the problem of behavioural difficulties the school encounters. Mary Pitkin and Sarah Upjohn both have access to resources that could help with techniques to improve pupils' emotional/mental wellbeing. Because it is a specialist music school and students are constantly competing with and assessing each other, the atmosphere can be pressurizing. It is important that students find strategies to deal with this.

Diet

The school provides three meals a day and cakes/cookies and fruit at break times. There are varying views on the quality and quantity of what is offered and students are from a range of backgrounds, cultures and traditions, which will affect their needs and opinions of school food. There were a number of comments and suggestions in the questionnaires relating to food provided which suggested that the food was not considered to be sufficiently healthy. There were requests for more seafood, more options of vegetables, having fruit available all day and more protein in the salad bar. One student did not want unhealthy break-time snacks and another suggested healthy snacks in vending machines. The group agreed that it is very important that students are well-nourished in terms of the quality of what they eat and how much is available to them. People need varying amounts of food depending on how much energy they burn, so there needs to be flexibility in the portions of food people have access to.

Recommendations and conclusions

Regarding fitness, students on the whole do not seem to be taking enough exercise, or to be sufficiently aware of its benefits. The school facilities should ideally be improved as they are at present inadequate. Students should have more timetabled PE lessons to fulfil the statutory requirement of two hours. There should be more optional PE on offer, with a wider range of activities. It is important that such activities are presented as enjoyable and worthwhile. All students should be made aware of the value of regular exercise.

Both staff and students should have an understanding of the importance of mental health. The school should continue to develop and implement procedures to support staff and students with regard to their general mental wellbeing. At present there are certain channels for staff to use if they have personal or work-related concerns but these may not feel sufficiently neutral or may not be clear. It might also be of benefit for staff to have access to counselling as well as students, and for them to have more support to deal with difficulties that can arise and affect performance in the workplace. The school as a whole needs to promote and encourage learning experiences and groups that can focus on how to manage problems of stress, anxiety, rivalry and feelings of low self-worth.

Concerning diet, again there should be general awareness of how this affects health and performance. The school is tackling issues concerning the provision of food, and the catering department has to work within the constraints of a budget. It was also suggested by the working group that additional notice boards alongside current catering notice boards could provide information about healthy eating in relation to fitness.

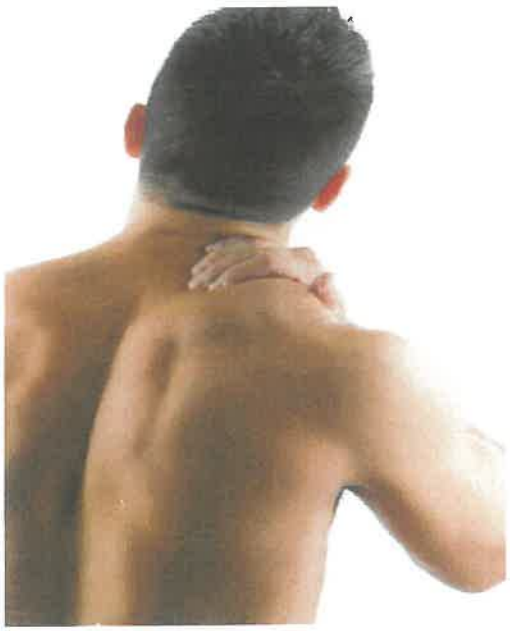
The three areas of physical fitness, mental health and diet are inter-related. They affect the individual's ability to achieve his or her potential and to experience a good quality of life. As an educational institution, the school must acknowledge this and should do its utmost to facilitate and encourage the healthiest possible life-style among students and staff.

Appendix G

Health Promotion Posters, displayed in the School - June 2013

What's that, Henry?

Pain is **NOT** Normal



Every Body Matters

What's that Henry?

If you have pain while playing:

Get advice.

From the school nurse

From the school physiotherapist

From your teacher

Appendix H

Script & Trigger Questions for Focus Group Meetings

Appendix H

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Script & Trigger Questions for Focus Group Meetings

Script.

1. **Read the following out loud to the group**

Hello.

My name is Sarah Upjohn and I am the physiotherapist at the school. As you know I am doing some research about injury prevention, health promotion and performance wellness in young musicians. It is part of a Doctorate of Education at the University of Cambridge

You have been invited here today because in order to get a balanced view, it is important that we hear from as many groups of people at the school as possible. Your thoughts and opinions and ideas are as important as anyone elses. In a short while, we will be discussing what people think and feel about things and there may be as many opinions as there are people in the room. Every single opinion is right and is valuable. We are not here to convince anyone of something in particular, nor to change anyone's mind. We are here to discuss things and to hear what each and every-one of you has to say. Every opinion counts, so please feel free to share your thoughts.

During this meeting I will be asking you about what you know and think and believe about risk factors for playing related injuries in young musicians. I will be recording this session because I want to be able to really listen to you remember everything that you share, so instead of scribbling notes. I will collect digital audio recording on my laptop and (for back-up) on a voice recorder, and also by collecting comments or drawings on some hand-outs that I will give you.

It is intended that what I find out during my research, including from this meeting, will eventually be placed in the public domain, for example via conference presentations, or as published articles in academic journals. However, please don't worry that anyone outside the group will know what you personally said because all information that I collect today will be anonymised during the analysis. This means that once the data is analysed no single person from the group will be able to be identified by the general public. I guarantee that no names will be used if any of your comments are used in the research project.

I am taking every effort to ensure that what is discussed in this meeting remains anonymous. Please can I ask you to take the same care, and respect the privacy of the other group members, by not discussing, outside of this meeting, anything that anyone else says?

So, can we all agree that our conversations will be confidential?

In the next 30 minutes we are going to look at some information, and I will then ask you to write some comments about them. This will take about 10 minutes. Then we will have a 15 minute discussion about risk factors for playing related injuries in young musicians.

Do you have any questions?
Are you happy to proceed?

Please turn over the information & consent form and read the information.

Allow time for participants to read the information sheet

If you are happy please sign it in the space provided.

Allow time to sign the consent form and then collect the consent form in

Please turn your name cards so that we can all see each others names. Thank you

Now I am going to hand you a pack of information.

Hand out 'risks for injury' information

There are four pieces of white paper, and one coloured piece of paper.

The coloured paper contains 5 questions / tasks.

Please spend the next 10 minutes or so, looking at the white pieces of paper and answering the Questions of the coloured piece of paper.

Time until 10 minutes.

Please can I collect those in now. Thank you.

Now I will switch on the voice recorders.

Switch on voice recorders and set timer on phone so that total time does not exceed 30 minutes.

I am going to ask you some fairly open questions. I would like you to be as honest and open as you can be when answering them.

- Before this session what did you know playing related injuries in young musicians?
- What did you know about these risk factors for injury?
- Do you think this information is relevant to pupils at the school?
- Who else might this information be useful for?
- How could a risk assessment tool like this be used in the school?
- Which stake holders might benefit from having a copy?

Many thanks for your help.

Appendix I

Full transcript of each focus group meeting

1st Focus Group meeting

Saturday 14th November 1.00pm

Purcell School: 6 pupils. 4 girls 2 boys from year 9 – 13.

English x 2

Korean x 1

Russian x 1

Singaporean x 1

German x 1

18:16

Q Before this session started what did you know about playing related injuries in young musicians?

5 seconds Silence

Did you know it was a problem?

J. Only that if you increase practise time dramatically or suddenly it might harm you

E. Yeah. I wasn't aware that if you had a growth spurt that could affect you or get an injury

H But I knew about the others because, well, that's what you learn in Alexander Technique Lessons

So you'd learned already what they were in Alexander Technique Lessons.....?

Do you know about playing related injuries?

B. Yeah, but I didn't know that not learning Alexander Technique lessons is a problem.

Yep. OK. Its not necessarily a problem, but it's certainly helpful in keeping mindful of those things.

What do you know about playing related injuries. So...

H. Well I knew about all of them because I had Alexander Technique lessons.

L. Yeah. Things like. I didn't know about...Well I had that with you before..... the fact that when you get stressed especially, It's like in your brain, so its like increasing your practise. You can have the same amount of practise get done every single day, but then if you get stressed, that just pushes everything and it's like a pressure on your muscles and everything. And that, I didn't know.

And in terms of how many of you here, have had any sort of playing related injury?

....4 out of six.....

And now knowing these, what do you think caused your injury? Have a little think.

H Well it wasn't only once. Like, the first time I did it, was because I increased the amount of practising

OK

and because like basically, I went to school, and like, when it came to a holiday, I just started practising loads and that's when I first got it, and next time I had a new teacher and had to change my posture...erm

A-L Mine was quite similar. The first time I just over practised. Erm. So I overstretched one hand, um, and the other time I had to change my posture.

Ok. Liya?

L. Well with me it was the fact that I was stressed and then it's not just.... the daily factors affect you. I think you mentioned that. Things like..I go to the gym sometimes and I push myself and like I do hand exercises and stuff which like the sudden increase in exercise even, can affect... the muscles, because the muscles get stripped...and then you start playing and the muscles get tired sooner.....and you feel like...."whats going on.....?" And that's because If you start doing something like for example 'etudes'.. I had a, once I wanted to do 5 etudes per week...just playing them.... And that didn't help, because I just got really tired, every single day, I played more and more and it didn't work, it wasn't really good for me. So I think it's important also to increase step by step instead of just starting doing 5 hours, and you told me once that instead of like you know after having 2 days off, you shouldn't start 5 hours straight away after, you should do one hour then do 2 hours... it's like running.

Do you think this information is widely known through-out the school, or not widely known?

Not widely known. Not at all.

Do you think it should be?

H Well I think People are genuinely quite on top of practise. For example. Over practising is quite obvious. But something like growth spurts and some of the other things you talked about.....

E I don't think people pay attention to it , even if they know about it, they don't pay attention to it in their everyday practise.

L Nobody thinks it's serious

E Like Yeah, they kid of assume it's not gonna happen to them

Anybody else think anything about the way injuries are managed at the school?

H Well at least I think that like there's a certain point when you can say that this is pain. And there is a good pain and there is a bad pain etc etc and it's hard to know that. If you have a good pain then it's obviously fine.

Can you tell the difference between a good pain and a bad pain?

H Not quite. But I like to kind of try...

L Also there are things like you just for example I don't know, you are tired and you didn't have a good sleep, so your muscles didn't really repair after a big practise and sometimes there are things like, I don't know how to say it, but I have for example a pain in my shoulder. It's not that bad and doesn't affect my playing so that I can't play. But it's still there. And I think. I don't know, we should invest in like a massage chair or whatever. Something to do like a quick something you know, like a quick massage, a little thing but it'll help, but because you're really scared to ask someone..... everyone is really busy...and like, obviously, you're only here once a week..... for example if I have an injury on Friday, to wait until Wednesday that's just not going to happen. Obviously I can't not practise until Wednesday. That's just not possible. Especially with the deadlines and stuff. And I think sometimes that there are pains, like local pains, caused by ...it's a good practise, but you know, obviously, it's going to tire you out, no matter if you are stressed, you healthy or whatever. So sometimes I think we need like an extra, very quick, you know, aid. Just to get rid of the problem. And .... people leave it. I know that because I do....and I will leave it for 2 weeks and then....before my audition or whatever or something happens or like....

Is that because you feel you can't stop?

L Yeah. EXACTLY

E Yeah. People get nervous. Especially with like injuries. You are so scared to admit that you actually do actually have an injury...

L Yes

A-L Yeah

E You are scared that it's going to be something serious that you are not going to be able to play again.....

L that is SO TRUE

E So you keep it in....

L Yeah. That is SO true

What would be a better than that as a mindset? Because clearly hiding something because you are scared it may be serious is the sure way of making it serious.

E Yeah. I think people need to know that it's, like, its ok, it's not generally going to be something that is going to ruin your career...

Yeah

E but you don't like admit it, then yeah....it could be...

So, if somewhere on those information sheets if it said 'sort it out early...'

L yeah. I think that's important

97 you know, would that be useful information?

98 L I think, yeah, it just shows, that, in general, if you have a really bad, or if like you twisted your
99 thumb, it's bad. That kind of thing. I think It's important with timing. I think. Especially with
100 musicians. We always have these deadlines, We always have these time limits. 2 weeks, 4 weeks, 1
101 day, 3 days, you know, its always with maths, like, I think. Its important to have something, because
102 this is how our brains work. You know. We have the counting and things. We don't realise that we
103 actually have that in our head. I think subconsciously if we looked at something and it was
104 something to do with numbers we will get it more. Maybe.

105 OK. More numerically?

106 L yeah. Maybe yeah.

107 E. I think with the posters that say like, if you've got pain STOP. They just look really scary.

108 L Yeah

109 So what would be better?

110 E something that's like kind of, more like, 'It's Ok to have pain....' Sort of thing.

111 But it's not

112 E But you need to sort it out.....

113 L but it just sounds really scary because you CAN'T stop. If it tells you never to stop...

114 OK

115 everyone else is practising but what I find difficult you see....What I find really difficult....what I
116 have..... if I go to NMB (new music block) top floor and I'm practising for I hour and I came in with my
117 friend, and I have enough practise time. One hour is enough because I can actually do a very
118 concentrated practise for one hour, and then my friend is playing for another 2 hours, now I will feel
19 bad because

120 E you can feel guilty

121 H you are.....

122 L Even though I have a pain, or for example haven't practised for 2 days, and couldn't do such
123 practise, or whatever, and I listen to my body and I like stop, the other person kind of tells you....
124 You know.....its a bit like ....We need to maybe work on our personal, you know.. to work personally

125 Go on Hanna

126 H And also like quite a lot of people say, that when they have pain, and I told them like go and see a
127 physiotherapist, or go and see the school nurse, they go no, like, all they are going to tell us is stop
128 practise. And they don't want to do that. And I wonder what's the point then....?

129 Can I ask, who else in this school do you think needs to know this information?

L House Parents. They are always there. They are ALWAYS there no matter what. They kind of see the psychological side.

E most of them don't tend to be musicians themselves. They don't know. If the nurse isn't here in the evening, they need to understand whats going on.

What about parents. Do you think parents, not necessarily yours, but parents of pupils here,....do they know anything about injury risks?

L Not all parents. There are ones who are more chilled. But like the parents who don't really know music, they're kind pf like "Oh, fine. Just don't practise. Or if you have pain, just stop.....But that's a bit silly because sometimes it's not just....you can't just...Its more about practising right..

E yeah

L but my teacher never says to me stop. She says find out whats the problem is. If you do it again it's just gonna come back.

Exactly

L While you have a pain, just try and find the spot where it doesn't hurt and then do it that way. But I think there are parents who are really pushy. They don't understand. They know all their childs deadlines and whatever, "Oh you have an audition in 2 weeks. You can't stop practising no matter what you do" That's why I don't really communicate with my mum about things like that because, or my dad, because they know nothing about music and they are like "what are you going to do tonight?" and they are like " practise more if it doesn't work". And it's not like that at all. You should just stop and think, and I hear you said to me "it's more of an intellectual practise. Just Stop it. It's going to be better for you". Some parents just don't understand that.

H Also, quite a lot of pupils in this school have got parents overseas, so,

OK

H we don't, I especially, don't really tend to communicate with my mum about posture.

E yeah, (giggles)

But would you tell her if you were injured?

.... 7 second pause.....

H if there were complications, obviously I wouldn't because all they are gonna say is...

You wouldn't?

H I wouldn't

OK

H All they will say is just stop practise.....

A-L I think it depends on how extreme the injury is.

(group agrees) Yes yes.

A-L Because I broke a finger, and I had to tell my parents. But first I didn't want to tell them.

L See I wouldn't tell them ...if it was really serious I would, but if it was just I strain my muscles, I wouldn't tell them.

Because all she's gonna say is "I told you so..." And that "I told you so" pisses you off. It's just like....I know exactly why its happened, I know it's because I've done this....and what's going on....why tell my mum and then hear it all again? I'd rather come to you and say to you....and you say "it's fine. You've done it again, but it's ok. You can work on it." You can calm me down, but my mum will disapprove.

E I think kind of also, like.... I don't know, like, if you have an injury and tell your parents, they try to make you start practising sooner and sooner and sooner. Come on you can do it. Does it hurt today?

Do you think the parents know about those 5 risk factors for injury.

(Group comment) no.

E especially when they are not used to musicians.

Do you think your instrumental teachers know about these five risks

Group. Definitely yes.

Good.

OK so. I'm just thinking. Where would be the most useful place to spread this information. Does it need to be school notice boards? Does it need to be on the website? Does it need to be everyone gets a handout?

Whats the best way of spreading the word

E Not a handout

H not the website

J the practise rooms I think

OK....So

L Just in the practise rooms actually because there you just stand there and look somewhere....a if there is a board somewhere you can see when you're playing...something will come up...and you'll think about it....

What about things like..... um. I've been talking to the Royal Ballet School because they work with elite young performers in dance rather than musicians, um, for example, some of the dance schools in September, every September, they have a session, reminding people of the risk factors. So onece a year you get a reminder.

L Yeah. You should do that because ....

E ....because we don't get that...and I think that as much as people might know that, if we had to sit and listen it might actually go in....

L yes

H I think its really hard because I think "oh I know why people get injured..." but its so boring going to this talk and seeing this poster etc, etc, etc that they are actually not aware of it and then just sticking up posters wouldn't really help.

So what would help, do you think?

H I don't know. It's quite a difficult question to be honest..... Social media....

What about social media? .....Do People use facebook?

L Yeah. A LOT. Cos you can just scroll down and see things

OK

L Like. If it's something to do with...like....I follow pages on fitness and stuff and they put little like clips up. Like just something making them very concise and just ... focused. That helps me a lot.... Just lists them down....

Now. That's been just over our 15 minutes. So I just want to say has anyone got anything else that they'd like to add or say about risk factors for injuries, or how injuries are or how risk factors are managed in the school. Or anything at all before we stop and have another biscuit.

J I don't think, erm, stopping practise should be encouraged because I think it is essential...Like....if there's large intervals which you are practising which aren't familiar to you, it's going to stretch.

L You're also stretching things....with pianists....they push themselves so hard... they they..... they will go another way... I think, I actually sometimes think that I lack this discipline Don't talk to do about music.....You can't divide the technical side from the music side .... Sometimes theres just things you need to do technically to see how your hand works....you don't just play it through and try again.... And the more times you play, the more you're going to get it....No....

Haven't we spoken a bit about the anatomy and biomechanics

L Yeah

.....do you think that's helpful?

L Yeah. Yeah. Because. If you've told us how it works....

What's under the skin.

L Yeah.

E Yes

L Yeah. That's very useful. Because for example, I had a pain that was inside here, and I was like...'Whats going on?' And then it was in my fingers and then in this bit and that bit, and I was just.....???????.....And it all made sense when you know what's going on..

E Yeah

H I think it should be a good idea to find a way.... When you say go and find someone when you get injuries...it can sound a bit like scary actually...

OK....what would be better...?

H I don't know. I think there should be a way where you can kind of interfere...like keep asking....like..like...pupils.

Se we are more proactive in asking.

H Yeah.

OK

B I think there should be a website where you can go more easily and consult....and the person you ask on the website ...we don't know who we're asking....and the person a=on the websiter doesn't know who we are.....

J Anonymous

E So you can ask them whether like what you've got is something you need to go and see someone about, or can solve yourself.

L I would find that a bit weird, talking to someone you don't know.....

E No. You don't like actually speak to them....you just send them a little letter....or post something...

L But...do you know that they are a specialist?

E Yeah. They'd be a specialist.....

H So you're going to bypass the school?

That's a good idea. Anything else that anyone else would like to say?.....Well thank you ever so much for your time....I'm stopping it now.

Total 18 16

Second focus group meeting

Wednesday 18th November

4 students

7.15 pm.

Before this session, what did you know about playing related injuries in young musicians?

N I always thought it kind of like don't do more than like 5 hours a day. That's, like, what you should be doing....Like don't injure yourself with practise.

So how did you come up with 5 hours a day?

N Well..... cos I know a lot of people who do that much.

F It kind of depends on the instrument though

N Yeah...

What do you play?

F I play the French horn doing 5 hours a day would be really hard. brass players can't do that much.....

Do you know anything about injuries?

F Um yes....

N Two or three of them, I don't agree with....You need to challenge yourself with new repertoire. If you just stuck on the same stuff....you'd never improve

That's right...but introducing new repertoire with different technical demands puts a completely different strain on muscles and soft tissues...

S I agree....

Which puts you at risk of injury.

S I agree because on the bassoon there is so much movement with just your left thumb

Yup

S and if somebody.. sometimes if.... I already have a hand injury...sometimes with movement....with wide movement... it pushes you.

N I know not to continue

That's good. The thing about risk factors is the more there are, the higher the risk

M I knew that the level of practise increases the risk....at NYO theres a really vigorous warm up and cool down... while I always knew what you could do to prevent getting injured but I don't think anyones really specified what exactly were the factors that could get you injured

So. In terms of those five risk factors that are listed, did you know about them

S Not having growth spurts.

M Yeah I didn't realise about physical changes

Shall I explain what happens? Initially long bones grow first and then soft tissues adjust. So immediately after long bones grow, muscles are weaker because they are working over a longer distance and you're less flexible so ....and you also lose your body map ... so everything changes after a growth spurt. Did you know about the risk factors Shona?

S I didn't know about the growth spurt

Did you know about the others?

S Yeah

Ok. So do you think this information is relevant to the pupils here?

S Yeah

N Yeah

M Definitely.

F And I don't think we should be asked to ???????

M We don't really talk about it.

N It's not really mentioned.

M No it's not really mentioned. When I started last year I was doing an hour and a half practise each day and it went up to 4 hours a day. So. I didn't get injured, but I started to get some pain in my wrist.... which...So ...then I realised I had to be a bit careful.....maybe it would have it would have been more sensible to up it gradually... just take more time....so..

F this is such an intense school as well.

Which is another reason to take care.

M. Obviously its great is that we can come and see you. I don't think enough people know about that

OK

M you are like hidden jewells. So yeah...Erm . But. We don't...Erm. Its Not. Erm its probably not a topic its not....

So how can we make it more

F I think Alex Tech lessons should be available

Comments from everyone simultaneously

S A lot of people don't really want to

Cos you've both had Alexander Technique Lessons haven't you? How has it helped you?

S Watch people act...

N It's just given me...like, how much, like, how much, like, just generally easier .... And ??????????????

How hard is it to access Alexander Technique Lessons? Could you have them here?

M No. Cos my allowance is used up. I would have done. But my piano teacher wanted me to have an hour. So my allowance is used....

How do you think....what strategies would work to help get this information out? What do you think would work? Should it be..... Posters round the school? On the website?

Clamouring of all voices

S I think it should be mentioned in assembly

N They should have like posture groups.

F I think we should have like..... You know they have PHSE days and stuff...

Yup

F I think they should have a day of just like Posture and stuff..... Like this is the general idea on a poster, but this is more detail..... Horn players.... Really have to twist yourself, because although I've tried to move the mouth piece....

M Yeah

The risk assessment tool, which was that bit of paper with three different colours, which gives you low risk, medium risk and high risk, do you think anything like that, along with these posters, would be useful? Maybe up in the practise rooms? Or...does anyone look at the school website? Or social media?

F Nobody looks at the school website

So where would you put them? Facebook?

S Yeah. Facebook

M I know the school has a twitter account

M Yeah I would.....???????????????? I guess things like that help. But I think just putting things around the school. ??????

S I think we definitely need something. I don't really look at posters that much.

OK

S If it was mentioned in assembly, I'd listen....

N I guess a tutorial day

M Or some form of.....Put it on the newsletter or something. Parents read the newsletter...and they could mention it to us... You know.

The other thing that I'm interested in: I think of the school as groups of stakeholders, and apart from the pupils, who else needs to know this

N Practise supervisors.

F and Instrumental teachers?

N Instrumental teachers sure

Do you think they know?

N I think they should know. It's obvious that everyone SHOULD know

S I don't think my teacher knew

OK. About injuries in general? Or about your injury?

S No. About the fact there is a physiotherapist at the school.

Oh really.

S Yeah. I don't think so.

OK.

N She's very like posture aware... in the way that she teaches, and....

Yeah.

N and she teaches all that stuff....

So OK. Do you think parents know about this stuff.

M It depends who your parents are. My parents are both musicians, so they probably know more than .....

F....more than my parents...

N Some people don't want their parents to interfere with their musical life....

OK. Why do you think that?

N Well that's just my personal view. Not necessarily other people. Like If my parents said anything about practise or came and helped me with practise

Do you think your parents ever would come and help you with practise?

N It happened.

OK

M Oh right.... I've had a really different....like.....I don't know....Both my parents are musicians

What do they play?

M My mums a violinist and my dad plays the French horn

Ok.

M and.. Yeah. And, er..... I don't know. Maybe it's just because I have a really good relationship with them. But. Well. My mum used to practise with me every day. Like I used to wake up at 6.30 and practise before school. Um. And then my dad would help me with practise as well...but it was mostly my mum. Um. But now, obviously I'm here, so she doesn't help me practise, but when I go home, she'll help. Like, if I want help, she'll help me. And so will my dad. They'll hear me playing and stop to say something.

So, N, why do you keep your parents apart from that?

N Like. I don't know. I guess it depends on how you came into music. Like. Um. Cos my parents aren't musicians and it's kind of something I've done myself. Like. I don't want, like at home, if they tell me to practise I literally just can't. Like. If they say practise, I cannot practise. I just physically can't do it.

S Yeah. My parents always comment on my playing. Like they know about music.

Are they not musicians.

S No.

9.18

N I'm glad I can just, like, practise, .But I guess I haven't experienced it but I like to be independent.

S. Yes. If my parents were musicians it would be different.

So. If the relationship between you and your parents affects how they think about advice they give, if they knew about risk factors for injury and started talking to you about them, would you just stop listening? Or would you listen?

N. Well its pretty different because it's not to do with, like, instrumental like music. But.....

.....I think..... I wouldn't like it....because....er...just generally, I wouldn't want....I don't want to be like... ???

What about the boarding house staff. Do you think they need to know?

N I cant really see that

M Most of our boarding house staff are practise supervisors. So they would know.

Do you think they do?

M I assume.....

Because?

M Well, because last year they gave an assembly and a topic in their assembly was that we need to be careful.....

N In Gardner it's very different because in Gardner there's just staff who don't play instruments and I wouldn't find it pleasant if they tried to help me with practising and stuff.

Not if they tried to help with practise, but do you think boarding house staff need to know about risk factors for injury? Just so that they've got an over view of what you're doing?

N Yeah

F Yeah. Cos it's not always just like how you practise that affects it.

Exactly. Other stuff. So if you've got auditions coming up or exams coming up.

S I think you could talk to us more about the whole deal.

About what?

F would you, realistically, hear it from your teacher

N the thing is

S You really wouldn't ask them about something else.

N That's true

Do you feel that they don't?

S Well. I feel like they're kind of separate. Because it's their job.

Ok

M I was only thinking that today.

Were you?

M Yeah. I was having a really bad day and was struggling and stressed

Awww

M And I had like loads of stuff to do and auditions and stuff and I went in and was like "I'm having a really bad day" . And they just put their head down. Like they didn't really care.

F there's some staff that do really care

M There are staff that do really care,

F but it's a just select couple rather than everyone

Do you think in terms of your peers, are you looking out for each other?

M Yes.

F Yeah

M 100%

N It's a really nice thing about being here.

M I don't know how it is with other music schools, but being here, everyone....you don't feel competition. Everyone is looking out for each other.

So. If you were recovering from an injury or trying to avoid an injury, and you were in a practise room and you wanted to stop, but your mate was next door and was carrying on, would you feel pressure to do more practise because the person next door to you was

6.04

M Sometimes I do. But it depends who else is practising. Because..

F I see it as motivation sometimes

M Yeah. I'll see it as motivation.....but...yeah...I'll see it as motivation

If someone is working really hard.....

S If you find it difficult, they understand

F yeah. Exactly. Because it's a small school...

N you know everyone

Yeah

M so you would know that if the person next door to you is practising loads... you would know why they were practising until 10.00 or 10.30, and they'd know why you were practising until 9.30 and not 10.30.

And would you ever say "are you overdoing it?"

M Erm..... People have said it to me..... But I think you know your own boundaries.

OK

M And obviously you know what deadlines you are working to.

Yup

M Obviously you have to be careful to think about these things.... But sometimes its overwhelming when you're preparing for something.

N My last teacher that there's no such thing as practising too much when it comes to playing a stringed instrument or the piano. That you can practise maybe 10 hours. And it's just Ok.

And what do you think now?

N My teacher kind of, my current teacher is kind of similar like that..... but he'd be happy if I did like 5 hours he'd be happy. .... I think still on a stringed instrument, it's still like, you should do, like that much. A day. You definitely can't with wind instruments.

Why?

N Because they have their lip. I heard that from friends. That they can't do more than three hours.

M. Although 5 hours? I don't do 5 hours any more. I do maybe 4. I think that's quite a lot.

N That is a lot.

M It's enough. Because also.... You're still at school. And you have the commitments to school to think about as well.. SO doing 4 hours a day is fine.

Yes.

F yeah. some people just lock themselves away and practise and don't talk to anyone.

N if you did 6 it would not be very concentrated practise.

How about quality rather than quantity.

N Quality is important. Because. 3 hours of playing. I had a masterclass and he said 3 hours of really concentrated practise is better.

Yeah. Absolutely. I agree.

F before I came here I was doing like an hour and a half a day of very disciplined practise. And that was fine because I was thinking about how I practise, rather than about how long I practise.

S I think we could do workshops on how to practise.

Ok. That's useful. That's useful.

M but they need to be incorporated into how to avoid injuries

Exactly. But it could all fall under the same thing, couldn't it? Because there's lots of research about how to practise.....people have found out how to practise

F you just have to do what works for you

M My mum and my violin preach different methods of practise.

OK

M So while I'm at school I do like how my violin teacher would want me to practise. But while I'm at home, my mum doesn't let me practise like that, and she annoys me.

Wait till she's gone out

M Yeah. She works anyway. So it's OK. But shes like slow practise only. But my violin teacher thinks not needed. Ever. She thinks that intermediates speed of practise is the best.

So. That has been just over 15 minutes. Does anyone else what to say anything else about risks for injury? or injury prevention? or anything else? Just while the recorder is still on? And if not, we'll turn it off and stop.

M You should do more of those.....We should have a day.

N Yes

M We could learn how to target specific areas of our body and specific things we could do to ease...

S We should have a massage table.....

M that s what I'm saying. At NYO we do massage trains.

Perfect.

S. Yeah

N Yeah. We should do that sometime

M and if we learned actually how to give a basic massage.....then we could all help each other.....

S I would love that. Can we go to a Spa....

Laughter

I think that's a really good idea.

N I think we should build a spa

There used to be a swimming pool in the art block. There used to be a pool

N I think people would not be as stressed if they could do that.

S I would LOVE to go to a spa

N There are two west wings..... which are abandoned in the Purcell School....And they should be practise rooms.

You think we need more practise rooms?

Yes

N Yeah. Fair enough if we havn't got much money. But we already have the rooms. They don't need that much money. They just need to re-furbish them

So which one is Dulverton

N By west wing.

Up that end of the corridor?

N Go down that corridor. It's by the boys loos. They should be practise rooms. It stresses me that there aren't enough

That there aren't enough practise rooms?

M sometimes you might have a window of half an hour

Yes

M and you think you can get half an hour of practise done.. But you spend 10 minutes walking round looking for a room.

S Because my bassoon is so hard to put together. It's got so many different bits....

Do you ever practise in your bedroom?

N Not allowed.

S well.... I have room- mates so not really....

N In Gardner it's a sixth form priviledge.....and we're not allowed

S I would love to but I can't

M I sometimes have to practise in my room because there are no practise rooms...but it's not ideal because you get distracted in your own room

F & S yeah, yeah

M And that's why we come somewhere like this so that you are in the perfect environment i.e you should have a practise room. Especially that whole early morning practise thing. I mean. Not that I have ever been awake to do early morning practise....But... I know that's probably only because I know that I'm 100% not allowed to do it because there's not enough rooms so its for the younger pupils

OK

M But if there were more practise rooms...

Then they'd be used

F we should have more practise rooms

Let me press stop.

3rd Focus Group Meeting

Boarding House Staff

January 4th 2016 10.45 - 11.30

N 12

I am going to ask some open questions and would like you to be as honest and open as you like as you answer. So before this session, what did you know about playing related injuries in young musicians? For example did you know about these as risk factors?

R I wasn't aware of growth spurts, but if you think about it it makes sense. But it hadn't been something that had crossed my mind.

Art I was like growth spurts? Oh yeah!

P We've had previous conversations. I just happen to have talked to you about it.

S I did too, because I've had some physio sessions

Because I've already talked to you.....

Did anyone NOT know about any of the risks, except for growth spurts, which is probably the most unusual

Group: No it was just growth spurts

So. Do you think that this information is relevant to the pupils at the school? And to the staff at the school?

Group: Yes. Absolutely.

What I have found out though, is that it's not very widely known. It would be fair to say there is a mismatch between us thinking its important and it actually being important in it's use.

So I just wonder, how do you think we can get this information out to more people in the school?

P. I thought the risk assessment one was (probably as a scientist) good. Because it had your high risk area, and highlighted what was high risk, and then how you could change it. It was quite.....erm....And its very simple. This could be half an A4 page.

If you were clever with a printer

P yes. And that could be dissemintated really easily, in a diary, or

So in the planner?

P it could go in the planner

Group: Yes

P it could just go in any of the ???????

South Africa: Its also a good discussion point .If you have a child that you know is overdoing it or whatever, it's a good way to say "Look, where would you pitch yourself" cos sometimes they are unrealistic. If they perhaps have a look at it and say "Well, I put myself there". And you could say, "well OK hold on, I've been monitoring you and actually are..." In that way it's a good guage. Its something concrete and not just you talking at them saying you're over doing it.

Hilary: I also think pre-entry to the school is a really important factor and we do send out some information to them from BAPAM....general wellbeing....for playing...and resting... but it's just one information sheet.. But I think if the parents and the pupils who's going to be attending the school has that in advance for them to look at, they're aware of it, so when they do come into the school, it's not like "Oh, I didn't know this...."

A common point of injury is after audition and before starting..

Hilary: and it's classic in that first term, as well, whatever year group they are, there are going to be a few.....

JH it's a really good idea, isn't it, What do you think about: when do they engage with the instructions we're giving them: pre-audition, what should I play? where would you like me to be? if there was something in there that was simple, straightforward in nature it would really helpful and supportive .....This is something that is going to be taken seriously, before you even come here.

Hilary: Its something we know about and it's normal...well it's normal in the sense that this can happen if this is what you do... and the risk factor is , they come in, they get an injury of some sort, its aniggle, and they won't say anything to anybody because they've just started at the school, and the risk of not attending at the school, and the place going to someone else...

They're really vulnerable aren't they?

Group: VERY vulnerable

R I think it is something that could easily be introduced to the new pupil induction that we do in the first week in September.

JH Yes

South Africa: Those first three weeks as we monitor them, as house parents, I think it would be quite easy to put something in there to support

R But actually, going back to where we started from????????

We're doing something not very well in terms of awareness. I sent a survey out to the parents and I got a good response , but less than 60 % of parents know I work at the school. Less than 60%.

JH You sent this out to everybody?

All the parents

JH So now they do.

Now they do. Yes. But prior to this they didn't.

P were they parents whose children didn't……I'm just thinking……if they weren't injured, they wouldn't know you were there

75% reported that their child had complained of playing related pain.

P Ok. Wow.

To them

Chloe Could they have an assessment with you when they first start, so you can just see whats going on. Because they might not even know.

So see what's going on and get them to think about it?

Chloe I also think showing them, like. Because I am quite a visual person, so , like a poster, might be good, but I don't necessarily stand and read it, whereas if you show everybody….. because, with me, as I'm not a musician, I think some of the positions they are in, are so unnatural, I see a violinist like this (demonstrates position) and it's horrible. I can't work believe that they're not always in pain. It's just horrible. It's not a natural position. I just think if you showed them, a natural normal posture that you should be in, and they might see how 'wrong' it is….

P what we see in our house, is kids come in, particularly with juniors, having done a lot less practise than they are expected to do here. Part of me wonders whether it's not just about saying "watch out for these signs" but we need to look at ……well effectively at the moment they are expected to go into a room and practise for 3 hours a day, erm , and what we don't really allow is for them not to practise. If they are injured, they have to have a note from you (Nurse) or you (physio) and at that point, they really are allowed to not take part, erm, and we perhaps should be providing theb opportunity for them to say "I've done this" or "I've done this" erm, that they can allow them to stop because ours come in, and they might have done an hours practise a day, and for an 8, 9, 10 year old, obviously, an hour separates down, and that would be about normal…. And they come to us and are expected to do three. And that's a little bit over your 25% INCREASE…

It is. It's a HUGE increase.

P Yes

Hilary: Sarah, I know you often say to the pupils who come along, to visualise, and I think that's something they find quite hard to take on board initially. That they CAN still practise.

There are OTHER ways of practising

Hilary. There are other ways, without physically doing it.

P pupil Z is a classic.

H Yes

P Cos actually she came in and she completely destroyed herself within a couple of weeks, wasn't it?

Yes

P Then, once we got her, and it was hard work getting her to stop, wasn't it? She stopped for a term, or something like that. And she visualised. And the change in her musicianship was enormous. And she reaped the benefits of stopping.

So. She found useful things to do

P Yes. She had a Spotify account and she was lucky that she had this Spotify account. And she went off and she spent every practise session developing her repertoire and thinking about it and that was such an important

R But unless they know how to do that, at such a young age,

P yeah

R when they get here, maybe a one off workshop or some kind of lesson where they can learn all this information about injury prevention, risk factors, what they need to look out for and then also techniques

Yep

R where you can get the learning how to sit properly, hold your instrument properly, and then how to visualise. All these different things.... A one off thing when they start and then that could be something that's incorporated through PSHE, done in Exams and Outing week, although that may be a bit late into the term

But the induction, at the start of the year,

MP Visualisation is useful in many areas and that's something in the course Im doing with the year 8s. It's part of that. If that is kind of 2 sessions in PSHE and at thes tart, or part of the induction programme, there are so many places...if they can o it..... not everyone can do it but if they can do it, it's such a useful tool, to understand how it works.

Hilary And the other thing that does, can, happen, is that they have a new instrumental teacher who sits down with them and says; "Right. I don't like your technique. You are going to k=now play like this". And takes them somewhere completely new and that also has the effect that

So if they change technique, but maintain the same amount of practise time, they are overdoing it. So if we know they are having a big technique change, they should be allowed to practise differently.

MP And I can think of one boy in my house last term, who that would have benefitted hugely. If he'd been allowed to reduce the amount of practise time, because he's been doing a big technique change.

R but maybe they are not made aware that the ... I mean, I don' know what happens, when a pupil changes their technique, whether the teacher just expects them to practise the same of whether

there is any guidance given by the teacher. I mean, maybe that's where we need to get the music teachers on board as well,

C Its communication, isn't it?

R Once you change your technique, to me, and I'm not a musician, but, its more or less going back to scratch and rebuilding and teaching new muscles.....

South Africa. But it would be really good for us to know as well, ...after 3 meets with the child....and I thonk that when they are little, they are so aware that they are here because they did that audition and they are so scared that anything is going to stop them.

They will do anything their teacher asks...of course they will....of course they will.....

SA they are scared of pain, or whatever, because they think, "oh, perhaps I'm not good enough to be here" or whatever and I think that's something we need to tell them. It's a natural part of being a musician.

R the feedback I get from some pupils when I do change technique, does it mean I'm not good enough because otherwise I wouldn't have to change my technique, and if I don't practise my new technique, for ten hours a day, they're going to kick me out. Kind of thing. And so their whole perception of having to change their technique we need to try and put a positive stance on it, cos otherwise, they just think...oh god. I must have been awful, how did I get in here, if Im now being told to change my technique.

Interestingly, I analysed one of the focus group meetings that I had with some pupils. There were two different groups of kids and from one of them, one of the words that popped out time and time and time again when I had done the transcript, was fear. They are scared of stopping. They are scared of doing less practise. They are scared of getting injured. And the words fear, frightened, scared, popped up time and time and time and time again. And that was quite erm, quite an eye opener for me. It was overt. It was just, y'know..... they're scared.

MP And I thin there is another problem related to that and that is, this particular young man, when it was happening to him, it was being compounded by his parents, because they were scared he would loose his place, because they could hear him practising and he was playing flat the whole time to start with, and for him, that destroyed his whole purpose and reason for being here. He's not a very confident boy anyway, urm, and cos mum and dad were scared as well, everywhere he went people were frightened of something. And I think we need to educate parents as well..

R that's what I was just saying. When we have one of these induction days in June when all the parents come

Of new, incoming pupils?

R New pupils come with their parents and it may be an idea to make parents aware that once they start they may be?????

?????

R it would be a good idea for you to stand up and explain to parents

S and I think communication is really important as well, because it might be that from a house perspective I am much more aware for example if one of the girls is stressed out and I might be less aware if they then changed technique,

And their teacher may not be aware of other stresses

S Exactly. So

So you are really beautifully placed because you've very often got an overview of whats going on....

M but we only have an overview with the music if the teacher actually is prepared to sit and communicate with us about it. Some are. Some are very good.

R yeah

M But there are those who actually, don't want to talk to us.

SA no they don't

M because they don't want us interfering.

One of the kids that was in one of the focus groups before said "my teacher said that you cannot over-practise if you play a string instrument or the piano". "It's impossible to do too much practise"

S I must say I do get some of the girls come in in tears after a lesson sometimes. Its just being stressed out from the pressure that they perceive as being put on them.

H the other factor, I think, is getting them fit.

10.44.

Again I think when they come to the school, that sport or physical exerciseis somethong they enjoy, or could emjoy, like in any school , if they try and get out of it, like in any school, erm. But they've got to be educated.....about the importance of keeping fit.

S When I started taking them running it took me a week to be able to get 2 of the girls to be able to run one lap of the field without having to walk.

C It's bad. It is really bad actually. I know its really trivial but... fresh air.....theres no seating outside....well hardly any seating outside.....and I think getting out and just being able to just be outside. It's so nice just to sort of open out. You feel like you're not being crushed by something

H So their wellbeing.... And then hopefully that reduces stress levels that might be coming from other areas

Group. Yeah / Yes.

JH But that brings us back to the thing.....as musicians, that's part of it.

In terms of all risk factors, any other thoughts about how we can get this information out ....we've talked about parents and instrumental teachers and pupils.... What..... What....? ..... Posters? Social Media? School website? What do people think?

Clamouring of voices.

JH Well the thing is the instrument teachers have got to be approached and they have got to have an up to date understanding...about putting the right sort of pressure, the right sort of exertion, the right sort of developing strengths, ...

S Are you doing this with the instrumental teachers as well?

I intended to. My research plan is to do that. But could I meet them? No because they are all in on different days and for different times and then they go to other jobs and it was impossible to actually organise a time to get together. So I have sent a survey. And I have sent the same survey to parents. Because it was proving equally not easy to meet them. S. Parents. So far I've got 51 responses, which I think is, ere, getting there. Instrumental teachers: 5 responses. Now I am assuming, kindly, that this is because it was sent to Purcell email addresses and perhaps they don't look at them until the term starts again. So I have extended the window for them. But.....

C They are key really.....They do believe everything they say. The kids believe everything.....So if they said it, they'll trust them.

But so do the parents. In that, another thing that came out of the parents survey "What would you do to get help?" "I'd ask the instrumental teacher" popped up first.

H Just a thought. You know we've had a video of the school..... The introductory video ... is there a possibility that futuristically there can be a video, urm, of all of this?

P Yes.

H y'know? Erm.....Getting some heads of departments...

A page on the website?

H But actually an official thing.....you know.... Positions.....all those sorts opf things that every so often..... if a pupils has missed it.....or you wanted to re-highlight what they had been told.....it's there, for them to see.... Sometime again.... This visual thing.....ummm... they take it on board.....or it's a reminder.

SA And it can include things like diet and going outside and all that kind of stuff.

H and maybe, you know, some thing from, y'know, the heads of the music department: this is extremely important

R I don't know what other music schools do, but this sounds like it could be a unique selling point of this school....

JH. Mmmm

Apart form it being a USP and being good for the school, I hate to, sort of, say it starkly, but there's a duty of care. We are injuring kids with the way we enable them to practise... and that's fundamentally not good enough.

R you can't change that unless you speak to the people that are most involved.

Exactly.

R and that's the music teachers... so

P and I'd almost go as far as to say that teacher who said you can't injure yourself by over practising, I'm sorry, but that's .... Abuse.... Yes.

Clamouring of voices.....b for 7 seconds

6.20

JH It gives credence to the old cliché that music education can (?????go badly?????)

I think it's important for people to know that, actually, you don't have to suffer for your art.It's not necessary and it's not good.

P in terms of disseminating the information, erm, I think we kind of need to look at what other health care providers do. So like looking at the NHS style of things, they provide a very simple, erm, you know, I'm not talking about injury prevention,....erm, but on other, erm.....I'm sorry....

No its fine

PB they provide a one page simple, A4, and then an on line thing

I've looked at a variety of health promotion initiatives, and hpow to do it, and all the rest of it

P yeah, yeah,

And you know what the best way of getting people to do stuff is? Include it in an exam.

Group murmuring and muttering.

S Sad that, isn't it?

Sad, but true.

M it's really sad

But the good news is that the HODs have all said yes when they reassess or assess the pupils they will include one question about health promotion.

JH Oh, that's really good isn't it? That's getting to where it ...

S It's a start, isn't it

Indistinguishable multiple comments

So. Just before we wrap up, has anyone got anything else that they'd like to say while the tape is still running? I don't want to take all 0of your time. I'm very grateful to you for joining in.

JA I was thinking another idea, and I spoke to you about this last year, I think it was, thenking about about doing little seminars, or doing whole school assemblies,

Yep

JA where you take a 10 minute slot or a 15 minute slot and you've got the pupils all there and you've got some instrumental teachers there and the academic teachers and you can do a lot of engaging things; Get them to stand up out of their seats and talk about different positions .

So it's really interactive

JA It's interactive, erm, type of presentation, certain people are visual people, and you could show them

I've been to some of the MDS funded dance schools and it's routine that once a year, at the start of the year, they have an annual reminder about nutrition and they're reminded about warm ups, and they're reminded about.... You know there are annual... These are routine things that happen annually. Which is useful bcause it keeps it as a topic of conversation. It doesn't slide off the agenda.

C A lot of my friends dance, and when they went to Uni they had hour lessons every week on, like, wellbeing, body health, things like that, every single week they had that, and they could ask any questions they wanted to, to their actual dance teachers. And then they also had, erm, things like yoga as well, which weren't part of their dance training, but they were part of their 'keeping their body' erm

Stress reduction

C Yeah, exactly,

H It would be interesting to know about past pupils and maybe bringing in someone to see how it's been for them leaving Purcell, and their perception of wellbeing. Do they, y'know, concentrate on it more because now they're more independent and had to do it, or, y'know, they've had that sort of....

That's a really good idea.

H And also to come back... and maybe talk to pupils, present day pupils.

Not necessarily about problematic things, but to say "it's really important that you do do this, and you take it on board now.

C What do they do at conservatoires. Do you know?

I do know, because I have asked them.

2.49

2.49

I spoke to 4 conservatoires about what they do and in all of them they are obliged to do something about health promotion somewhere in their syllabus, but where they do it and what they do and how much they do varies between each one. So some have got an hours lecture in the induction week, and some have got a module that runs through a whole semester and so it's highly variable. Because I was hoping to lust lift what someone else had 'invented' and just drop it here to younger kids, because the research, again, shows that health promotion stuff in the conservatioires works but has no impact on injuries sustained before they go there so we need to work on sorting it out a step earlier.

CR ??? I'm interested in what happened to me ...it would be quite interesting to get .... Unintelligible speech

multiple voices, general noises of agreement

CR this is what happens when I spent years in that position

The National Youth Choir people who do auditions, singers come in and they play 'spot the instrument Bingo' with the singers, because you can see it... once you know what you are looking for...

P Just thinking that one of the other big thongs that we see is when kids play different instruments so they go from very different. They go from violin with a very stretched...

Yeah, yeah,

p... hand, to a piano where....

....it's the complete opposite..

P and they swap very quickly, and within that hour block, if they do half an hour of piano and half an hour of violin, that's quite a change.... It makes me kind of think posture I suppose.

Or Stretches in between changing.

P Yeah, yeah....

S and the time of day that they practise which instrument.. I know XX for example has now been advised to sing in the morning and not play her oboe. And she play her ovoe in the afternoon, for various reasons it's not helpful for her to play her oboe first thing in the morning.... So really... for the kids to think about when..... if they've got 2 intruments, which one should I be doing at what time of day?

So just thinking about it more really.

P Are you looking at singers

No

P Not looking at singers.

Not looking at singers for a variety of reasons. One is that I don't really see them here so it wasn't really flagged up in my head as the issue to be addressed. And also its outside my area of skill.

Anyway. Anything else...
Stop.

Appendix K

Industry Standards for Dancer's Health, Wellbeing and Performance

Appendix K

'Industry standards for dancers' health, well-being and performance'

Context

This work stemmed from the need to update the Dancers' Charter (the small booklet Dance UK published originating from the delegates at the first Healthier Dancer conference in 1990), which went out of print in 2001, and takes into account the findings and recommendations in Fit to Dance 2 and the positive steps forward the profession has made over the last 20 years.

This draft was drawn up by Dance UK's Healthier Dancer Programme following input from representatives from dance companies, dance training and education, independent dance and community dance. It is an attempt to provide, in one simple document, clear guidelines on the standards of practice the dance industry is striving for in this area that can be used as an advocacy tool and checklist.

The dance profession aspires to:

- Excellence in dance performance.
- Healthy and effective dance training/teaching.
- Fit, healthy, confident, accomplished dancers providing positive role-models for future generations.
- Responsible employment taking into account dance specific industry recommendations in addition to statutory health and safety requirements.
- Continuing professional development.

All dancers have a right to:

- Be taught safely and effectively by an appropriately qualified and experienced teacher.
- Education in and access to up-to-date information on healthy dance practice, injury prevention and dance science.
- Access to affordable and fit for purpose medical healthcare and dance science services.
- Safe and appropriate spaces to work in.
- A working environment that allows for adequate rest, nutrition, hydration.
- A working environment that is conducive to psychological as well as physical health in order to meet the performance demands of the dancer-athlete.

Dance education and training

For young people and the general public will include:

- A basic introduction to warming up and cooling down, nutrition and applied anatomy (including the growth spurt), demonstrated through the teaching.
- Clarity from the teacher for students and parents on why these are important and how they apply to healthy dance practice.
- Signposts to further information for students and parents.

For vocational dance students will include:

- The above and…
- Education in how the interrelated areas of anatomy, physiology, biomechanics, psychology and nutrition apply to dance practice and performance.
- Essential information on injury prevention and management.
- Essential information on the growth spurt.
- Dance spaces – what the requirements for safe and optimal dance practice are and how to mitigate risk in circumstances that aren't ideal.

For dance teachers will include:

- The above and…
- The application of the above in and through the teaching of dance.
- Basic first aid and the contents of a dancer's first aid box.
- Continuing Professional Development (CPD) on the above subjects to be undertaken at least biennially.
- Being a member of an appropriate network/organisation that will ensure access to up-to-date information and news of developments in the field.

Professional dancers, choreographers, directors and dance managers:

- Will keep themselves regularly updated on the latest best practice for dancers' health, wellbeing and performance appropriate to their position.

Dance Medicine and Science researchers / practitioners:

- Will uphold their responsibility to disseminate research and application of relevant findings to dance educators to allow the above.

Dance medicine and science support

For all dancers will include:

- Use of the NHS: dancers educating the health practitioners seen about the specific needs of dancers (Dance UK and its partners will lobby for more 'Sports and Exercise Medicine' specialists and to have dance as a speciality within that).
- Dance UK's Practitioners Register: ensuring dancers know about the register and can access it to find dance knowledgeable medical practitioners when they need them.
- Dance specific musculoskeletal assessments for individuals to understand their own anatomical limitations in order to work with them.
- Monitoring of growth for young people to adapt training accordingly during growth spurts.
- Health questionnaire to be completed by individuals to flag up any potential problems to be aware of during dance training.
- Access to suitable first aid, especially ice.

For dancers on intensive training programmes:

- Regular assessments – musculoskeletal, health, fitness, anthropometry – to monitor for improvements/problem areas, helping to assess effectiveness of the training for that individual.
- Supplementary training provided as needed and recommended for individuals following individual assessments.
- Access to (at minimum) a dance knowledgeable physiotherapist, nutritionist and counsellor as well as registration with a local GP.
- Longitudinal monitoring of injury for analysis in order to spot trends, mitigate identified causes of injury and inform resource provision and training.
- Access to an appropriate medical insurance scheme.

For professional dancers:

- Regular assessments – musculoskeletal, health, fitness, anthropometry – to monitor for improvements/problem areas, helping to assess effectiveness of the training for that individual.
- Access to multi/interdisciplinary team of dance medics and scientists including: physiotherapist, masseur, Pilates (or other somatic/body conditioning practitioner), physiologist, psychologist, nutritionist, GP, physician, surgeon.
- Supplementary training programmed as per recommendations from medical/science team following assessments/consultation.
- Longitudinal monitoring of injury for analysis in order to spot trends, mitigate identified causes of injury and inform resource provision and training.
- Access to an appropriate medical insurance scheme

See also Trinity Laban's research in the Centres for Advanced Training (CATs)

Dance UK Eating Disorder Policy Recommendations (302.8 KB)

Australian Ballet Injury Management and Prevention Programme (1.9 MB) (2007)

Guidelines for Professional Dance Companies on Healthy Nutrition (156.4 KB) (Dance/USA Taskforce on Dancer Health, 2011).

Working environment

Dance spaces - the requirements for safe and optimal dance practice are:

- A clean, suitably sprung floor with the appropriate surface for the type of dance (see also Improving Dance Floors and Dance Floors by Mark Foley (1998, Dance UK)).
- A high enough ceiling to allow jumping, leaping and lifting without obstruction.
- Enough space so that when limbs are outstretched each dancer has enough personal space not to come into contact with an obstruction/fellow dancer.
- Natural lighting (for regularly used rehearsal spaces and studios).
- Well-ventilated.
- Heating able to be maintained at a comfortable 21c; not going below 18c.

See also Dance Spaces by Mark Foley (1994, Arts Council England) and Dance Teaching Essentials (2002, Dance UK) and FAQ on dance floors for useful links.

Working time for dancers:

- **Hours:** in practice work load is known to increase up to 10 hours per day with proximity to performance periods (Wyon, 2010), however this high workload may be a contributing factor to dancer's self-reported high levels of fatigue and injury rates (Fit to Dance 2) – focus should be on quality not quantity of training (Wyon, 2010). At least one day a week should be free of strenuous physical activity and free of dance. More research is needed to give optimum recommendations.
- **Travel / touring:** ensure that rest days really are rest days and not filled with other physical activity or travel – plan so that dancers are not performing in the evening of a day spent travelling a significant distance (Fit to Dance 2 – p.103)
- **Periodisation:** draw up a plan of the year or the season that includes rest periods as well as work periods – also looking a weekly and daily schedules – ensure those making decisions about schedules and touring understand the importance of rest and risks of excessive or monotonous workloads (Fit to Dance 2 – p.103). The week immediately prior to each performance period needs to be designated as taper – entailing reduction in volume of dancing time, but not in the intensity of the dance (see Wyon, 2010 – for full application and example). Periodisation should be evolving and continually adjusted to reflect changing performance schedules and dancers' fitness levels (Wyon, 2010)
- **Adequate breaks for refuelling** – day to day planning of small breaks is highly important for optimal training and performance of dancers. A lunch break of at least 1 hour should be provided in the middle of the day as well as small breaks around every 2 hours to allow food and fluids to be taken on board. Dancers should also be given opportunities to take on fluids during class and rehearsal

Appendix L

Copies of slides from power-point presentation used in 'Introducing Dr Muso' School Assembly

Feel pushed for time?
Feel like you need more minutes in the day?

Let Science Help

Introducing Dr. Muso

Avoid Errors 1

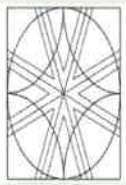
slow down. Rallentando

Target your practice

Target your practise at sections with errors, until the entire section is secure

From the very start

Learn a new piece with all the detail included 2



Detail

dynamics, expression, phrasing, shaping, colour,

Have a plan 3

For each practise session,

- know what you want to achieve
- And ensure that you do!

Practise Thoughtfully and Mindfully 4

Set 'bite-sized' goals towards achieving your target.

Stay focused & Concentrate

Visualisation / Mental Practise / Off Instrument 5

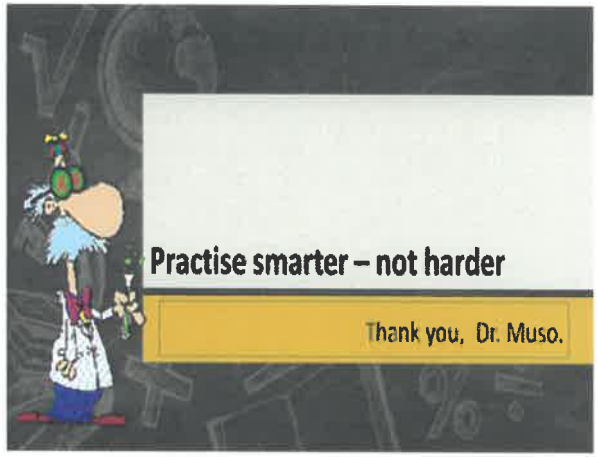
Put your instrument away

Close your eyes

Imagine the feeling of practising the section you want to practise

Summary

1. Avoid errors
2. Include all elements from the very start
3. Have a plan at each practise session
4. Always practise thoughtfully and mindfully
5. Use visualistation techniques



Appendix M

Health Safety and Welfare Policy H5:

Playing-related Musculoskeletal Injury Prevention Policy

The Purcell School
for young musicians

Health, Safety & Welfare Policy H5

Playing-Related Musculoskeletal Injury Prevention Policy

Introduction

Playing related musculoskeletal injuries in professional orchestral musicians and in conservatoire students are common and have a lifetime prevalence of between 26% and 93% (Zaza, 1998). The severity of these injuries ranges from inconvenient to career ending (Culf, 1998; Zaza, 1998)

The majority of these injuries are preventable.

Research has shown that injury prevention strategies in Conservatoires can reduce the incidence of such injuries, but have no impact on pre-existing injuries acquired before reaching Conservatoires. (Zander, et al, 2010). This strongly suggests that there is a need for injury prevention awareness in a pre-conservatoire setting, such as here at the school, and it is because of this that this policy has been developed.

Statutory Framework

This Policy holds a unique place between the Schools Child Protection Policy and the Schools Health and Safety Policy, and has been placed within the Pastoral Policies. It has been developed under the following Statutory Framework:

1. 2002 Education Act (section 175) /157 Education (Independent Schools Standards) Regulations 2014 **which require Independent Schools**
   to safeguard and promote the welfare of Children who are pupils at the School.

2. Health & Safety at Work Act (1974) and The Management of Health & Safety Regulations (1999) **which requires staff, students, contractors and visitors**
   to co-operate on health and safety
   to take care of their own health and safety
   to take responsibility for the health and safety in the areas where they work
   to be aware of the impact of their actions on themselves and on other people.

Risk Factors for Playing Related Musculoskeletal Injuries

An audit of over 3 years of physiotherapy notes from the school physiotherapist (October 2008 – December 2011) revealed five distinct risk factors for playing related injury in pupils.

These are: **Sudden increase in playing time**
Introduction of new repertoire with a different technical demand
Posture or position when playing
Stress
Growth Spurts

The risk is cumulative, so the more risk factors that co-exist, the greater the likelihood of injury.

Injury Prevention Guidelines

Absolute rules about injury prevention are impossible to produce as there are widespread differences between individuals' physical capacity, and this capacity is not fixed. However general guidelines for injury prevention are useful. To this end the school requires all stakeholders at the school who are directly involved with pupils' instrument playing, including pupils, parents, music heads of departments (the HODs), visiting music teachers, practice supervisors and boarding house staff

- to have knowledge of and be actively aware of these five risk factors for playing related injury
- to use this knowledge to promote safe practice in music education and in the development of the young instrumental musicians at the school.

Specific care should be taken by stakeholders to ensure that pupils:

- increase playing time gradually rather than suddenly
- are introduced slowly and gradually to new repertoire that has a new or different technical demand
- are aware of what a neutral posture is. When not playing they should be encouraged to return to a neutral position as often as possible. In this instance 'neutral' refers to returning to a symmetrical position, lengthening the spine, and letting go of shoulder girdle tension
- are allowed to take time after a growth spurt before suddenly increasing playing time, attempting new repertoire with a different technical demand, or changing to a larger/ heavier instrument
- acknowledge that stress can increase muscle tension, and seek strategies to reduce muscle tension when stressed, such as by taking part in physical exercise and doing gentle stretches before and after playing

Sources of Information about injury prevention

Information on these risk factors for injury and on injury prevention is provided

To pupils in the Pupils Planner and in the induction session for new pupils and their parents

To parents in the induction session for new pupils and their parents

To new visiting music teachers, in their induction pack and annually from the HODs

To practice supervisors in their induction pack.

To boarding house staff in their induction pack

Throughout the school on noticeboards.

References

Culf, N. (1998). *Musicians' Injuries - A Guide to their Understanding and Prevention*. Tonbridge Wells, Uk: PARAPRESS LTD.

Zander, M., Spahn, C., & Voltmer, E. (2010). Health Promotion and Prevention in Higher Music Education. Results of a longitudinal study. *Medical Problems of Performing Artists*, *25*(2).

Zaza, C. (1998). Playing-Related Musculo-Skeletal Disorders in Musicians: a Systematic Review of Incidence and Prevalence. *Canadian Medical Association Journal*, *158*(8), 1019–1025.

Appendix N

Playing-related Injury Risk Factor Information included in the

2016-2017 School Planner

Appendix N

Playing-related Injury Risk Factor Information included in the 2016-2017 School Planner

'Keep Well - Play Better'

Through instrument playing, young musicians can place very high demands on their bodies.

Looking after your body is as important as looking after your instrument.

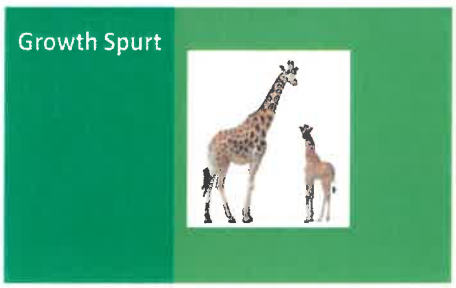
The following advice can help you and your body to remain fit, well, comfortable, and injury free.

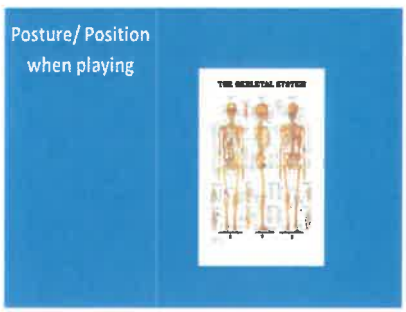
- Keeping fit, being strong and being flexible all help you cope with the physical demands of playing: we encourage you to participate in physical activity and exercise whenever you get the chance.
- Warm up before playing:
- Gentle stretches after playing
- Be aware of accumulating tension in muscle groups such as shoulder girdles, forearms, or hands, and 'let go' whenever you can.
- Be well hydrated. Drink plenty of water during the day

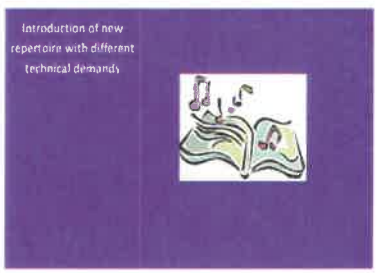
There are 5 main risk factors for playing related injuries.

Risk	Reduce the risk by:
Sudden increase in Playing Time • Muscles and tendons need to gradually get stronger and fitter.	Increasing playing time gradually to allow time for muscles and tendons to get stronger and fitter
Introduction of New Repertoire with different technical demands • New technical demands can place stress and strain on muscles and tendons	Being aware to start gradually, until your arms and hands are used to the new demand. Learning new pieces in the middle of a practise time: once warmed up, but before muscles are fatigued
Posture/ Position when playing • Our bodies are happiest and healthiest when we maintain a 'neutral' posture, which places least load on joints, muscles and tendons.	Aiming for symmetry and alignment Returning to this when not playing
Stress • Remember that stress can make our muscles tense, which increases the workload they are doing. It can also reduce freedom of movement, if our muscles are 'holding on'	Being aware that stress from other aspects of life (such as exams, school work, relationships) can affect how our muscles are when we are playing. Do regular stretches to reduce accumulating tension. Do some 'stress busting' activity, such as running, or swimming, or Yoga.
Growth Spurt • Immediately after a growth spurt, our muscles and tendons are more vulnerable to injury	Being aware of whether you are having a growth spurt. If you are, this is not the time to suddenly increase practise time, or introduce very different repertoire, or change instrument.

Look out for these Posters !







The School Physiotherapist, Mrs Upjohn, works one day / week (usually on Wednesdays). Appointments to see her are free and can be booked via Mrs Austin, the School Nurse. She has extensive experience in assessing, advising and treating young musicians.

Mrs Upjohn also works for The British Association of Performing Arts Medicine (BAPAM), and has given presentations about Musicians Wellbeing for the Musicians Union, Help Musicians UK, and BAPAM.

Other resources:

www.bapam.org.uk health resources page has printable handouts

Performing Arts Medicine Association (PAMA), and
Australian Society for Performing Arts Healthcare (ASPAH) fb pages post regular, relevent, informative, and interesting items of news and research.

Appendix O

Set of personalised and signed letters from Dr Muso

i) to members of the Upper Sixth form who were preparing for Conservatoire auditions in December 2016

ii) to each pupil in year 9 and 11 who were preparing to re-audition for a place in year 10 or year 12 at the school.

iii) to each instrument group as they prepared for their instrument assessments during the Autumn term 2016-2017.

iv) to each member of the School Orchestra before the start of an Orchestra Course

September 2016

From: Dr Muso's Muso Lab

Dear Upper Sixth Form

Congratulations on reaching the final year at The Purcell School.
Most Upper Sixth formers will have been thinking about 'Where to go after Purcell?' for a long time, and the majority of you will now be preparing for Conservatoire auditions in December.

You are intelligent, motivated and extremely capable, and I would like to ask you to use these skills and attributes when preparing for your Auditions.

As you will remember, there are 5 main risk factors for playing related injuries in young musicians.

The Muso Lab has noticed over several years that year 13 pupils are particularly at risk this term if they suddenly increase practice time and are stressed as they prepare for Auditions.

Please take care of yourself:

- Increase practice time gradually
- Take regular breaks
- Stretch after playing
- Use visualisation techniques to practice 'off instrument'
- See Mrs Austin or Mrs Upjohn if you do develop playing related pain.

With very best wishes for a successful term.

Dr Muso

September 2016

From: Dr Muso's Muso Lab

Dear [redacted],

Soon you will be re-auditioning for a place in Year 10.
You are intelligent, motivated and extremely capable, and I would like to ask you to use these skills and attributes when preparing for your re-audition.

As you will remember, there are 5 main risk factors for playing related injuries in young musicians.

The Muso Lab has noticed over several years that pupils preparing for auditions and re-auditions are particularly at risk if they suddenly increase practice time and are feeling stressed. This risk is increased if you have recently had a sudden growth spurt.

Please take care of yourself:

Increase practice time gradually

Take regular breaks

Stretch after playing

Use visualisation techniques to practice 'off instrument'

See Mrs Austin or Mrs Upjohn if you do develop playing related pain.

With very best wishes for a successful re-audition.

Dr Muso

Dr Muso

September 2016

From: Dr Muso's Muso Lab

Dear [redacted]

Soon you will be re-auditioning for a place in Year 12.
You are intelligent, motivated and extremely capable, and I would like to ask you to use these skills and attributes when preparing for your re-audition.

As you will remember, there are 5 main risk factors for playing related injuries in young musicians.

The Muso Lab has noticed over several years that pupils preparing for auditions and re-auditions are particularly at risk if they suddenly increase practice time and are feeling stressed. This risk is increased if you have recently had a sudden growth spurt.

Please take care of yourself:

Increase practice time gradually

Take regular breaks

Stretch after playing

Use visualisation techniques to practice 'off instrument'

See Mrs Austin or Mrs Upjohn if you do develop playing related pain.

With very best wishes for a successful re-audition.

Dr Muso

Dr Muso

October 2017

From: Dr Muso's Muso Lab

You are just about to start a wonderful Orchestral Course, and over the next few days will spending hours and hours playing thousands and thousands of beautiful notes.

This needs thinking about, because I want you to play comfortably and be at your best for the concert on Monday.

The Muso Lab has noticed over several years that pupils taking part in Orchestral Courses sometimes develop pain because the demands on your body during the course are higher than usual, so it is important to take extra care of yourself.

Think of yourself as a musical athlete.

- Warm up before playing.
- Stretch during breaks and after rehearsals
- Notice 'micro-pauses' during rehearsals, when you are not playing for a short while
    - use them to let go of tension
    - adjust your sitting posture
    - return to neutral
- Your soft tissues need to be well hydrated to work well, so drink plenty of water
- Your body needs fuel so eat well.
- Your muscles need rest and recovery time so relax in the evenings.

You are intelligent, motivated and extremely capable, and I would like to ask you to use these skills and attributes to look after your body during the Orchestral Course.

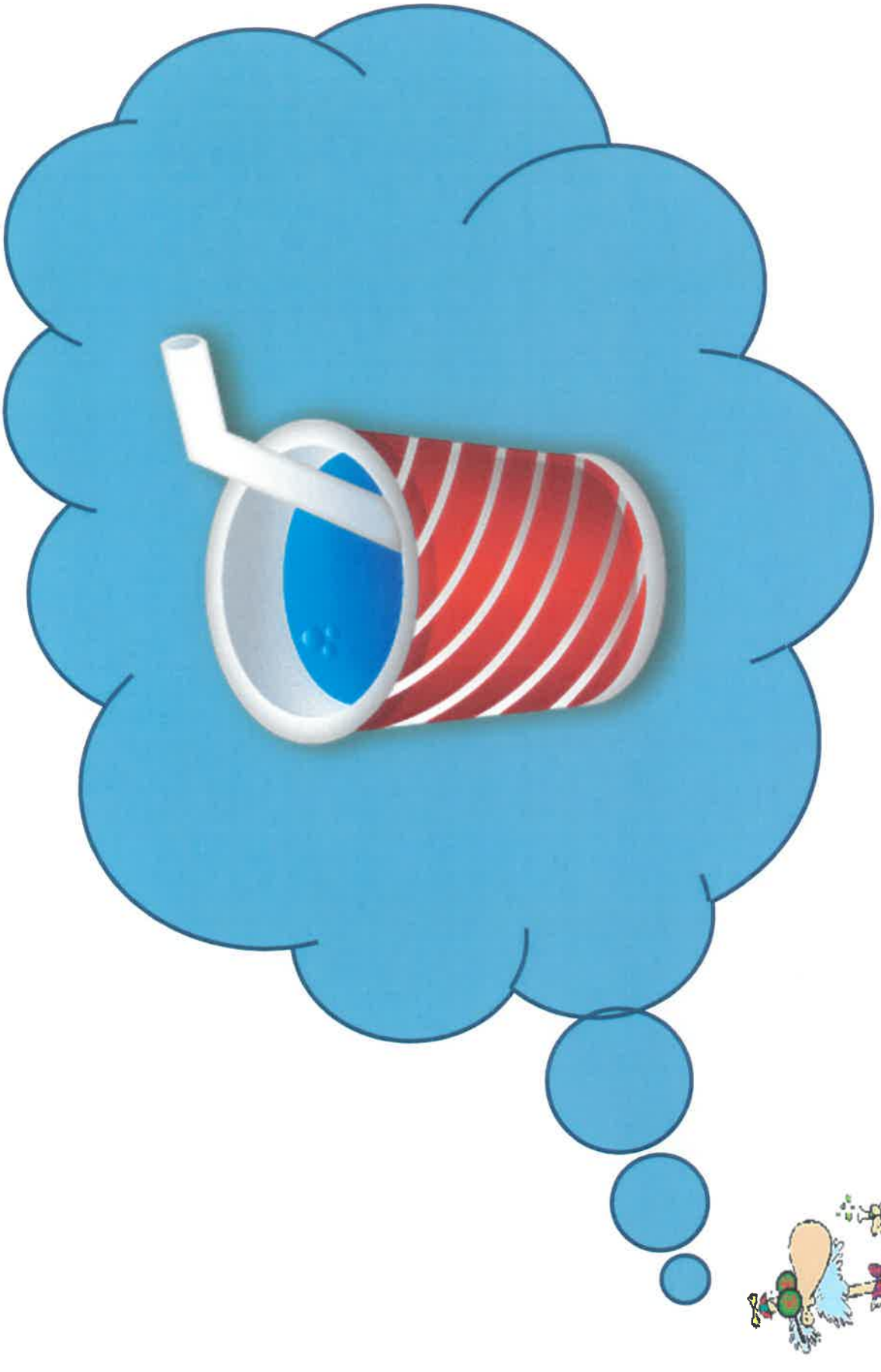
With very best wishes for a comfortable Orchestral Course and a successful concert, and then a Happy Half Term Holiday.

Dr Muso

Appendix P

Set of posters used immediately before and during an Orchestral Course at the school

Hydrate



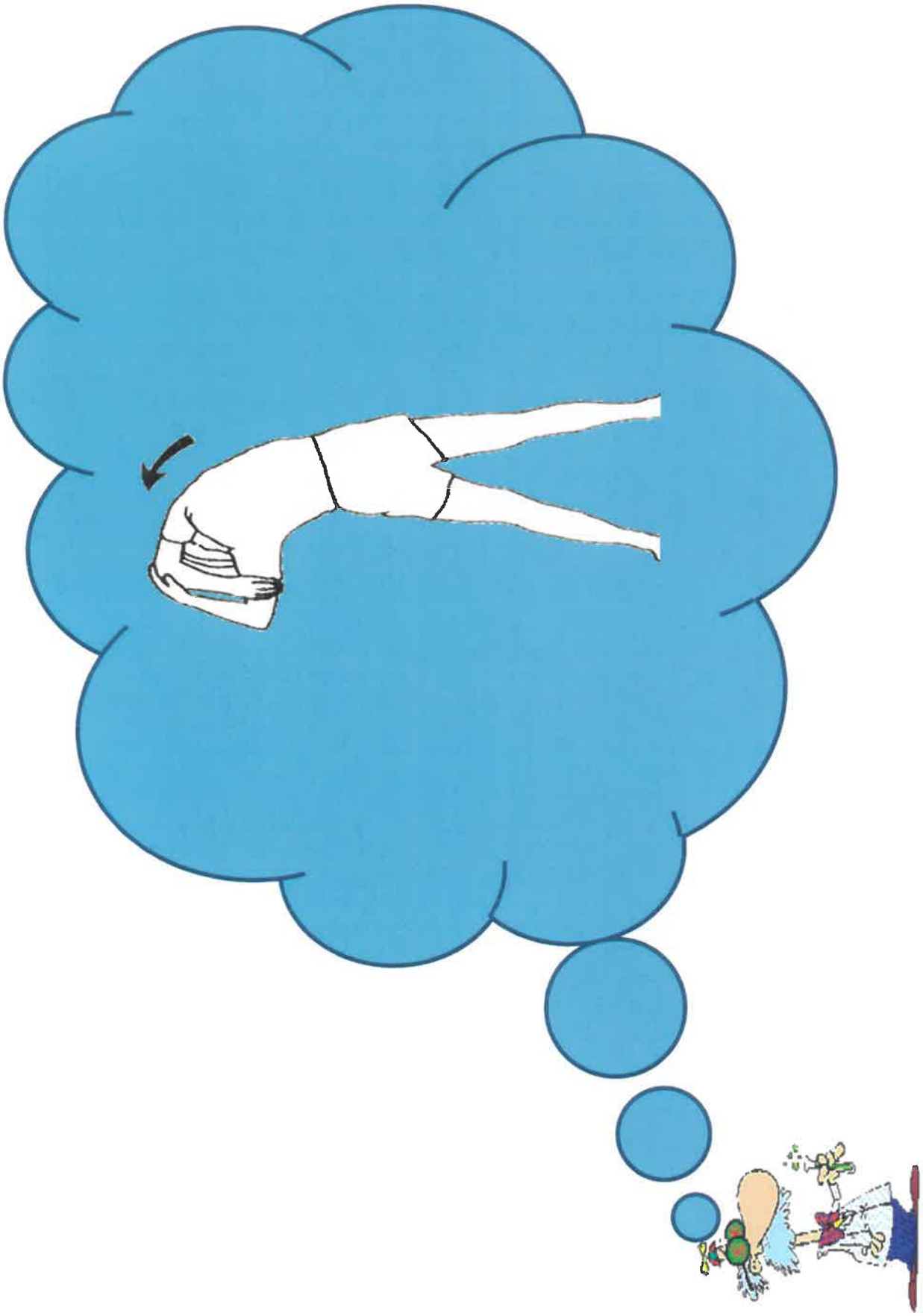
Warm
Up

Micro-
pause

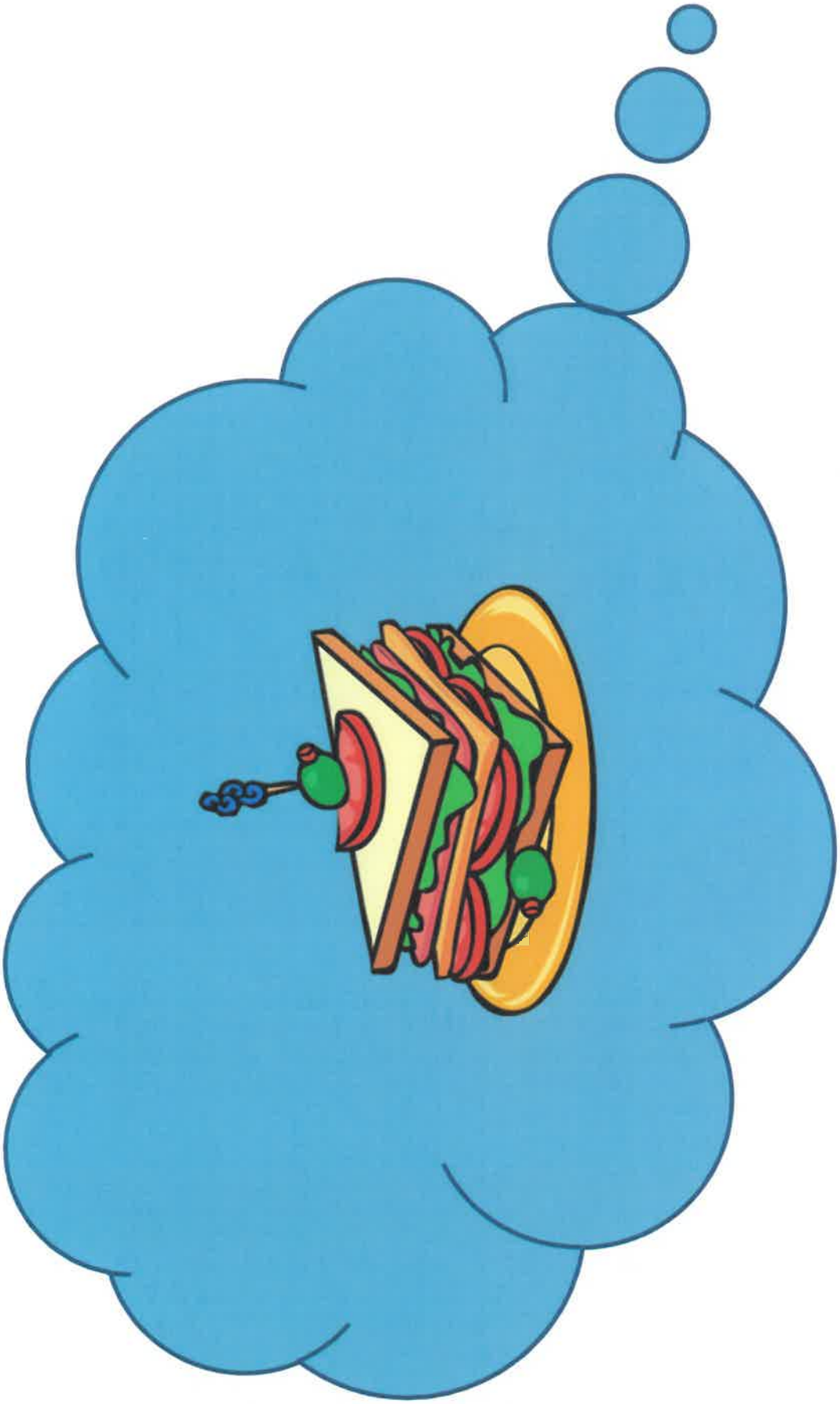
Think

Let go of
tension

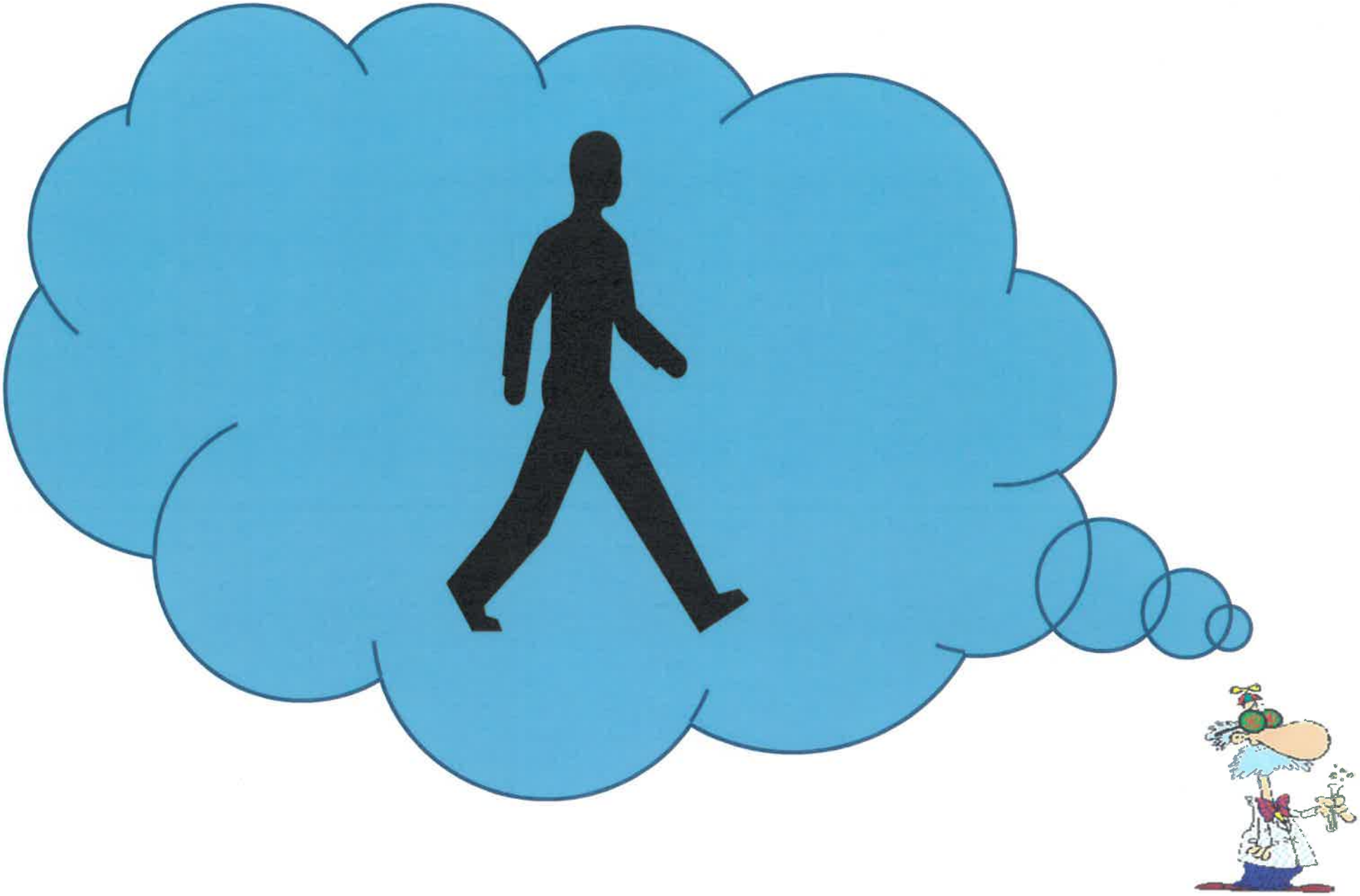
Stretch



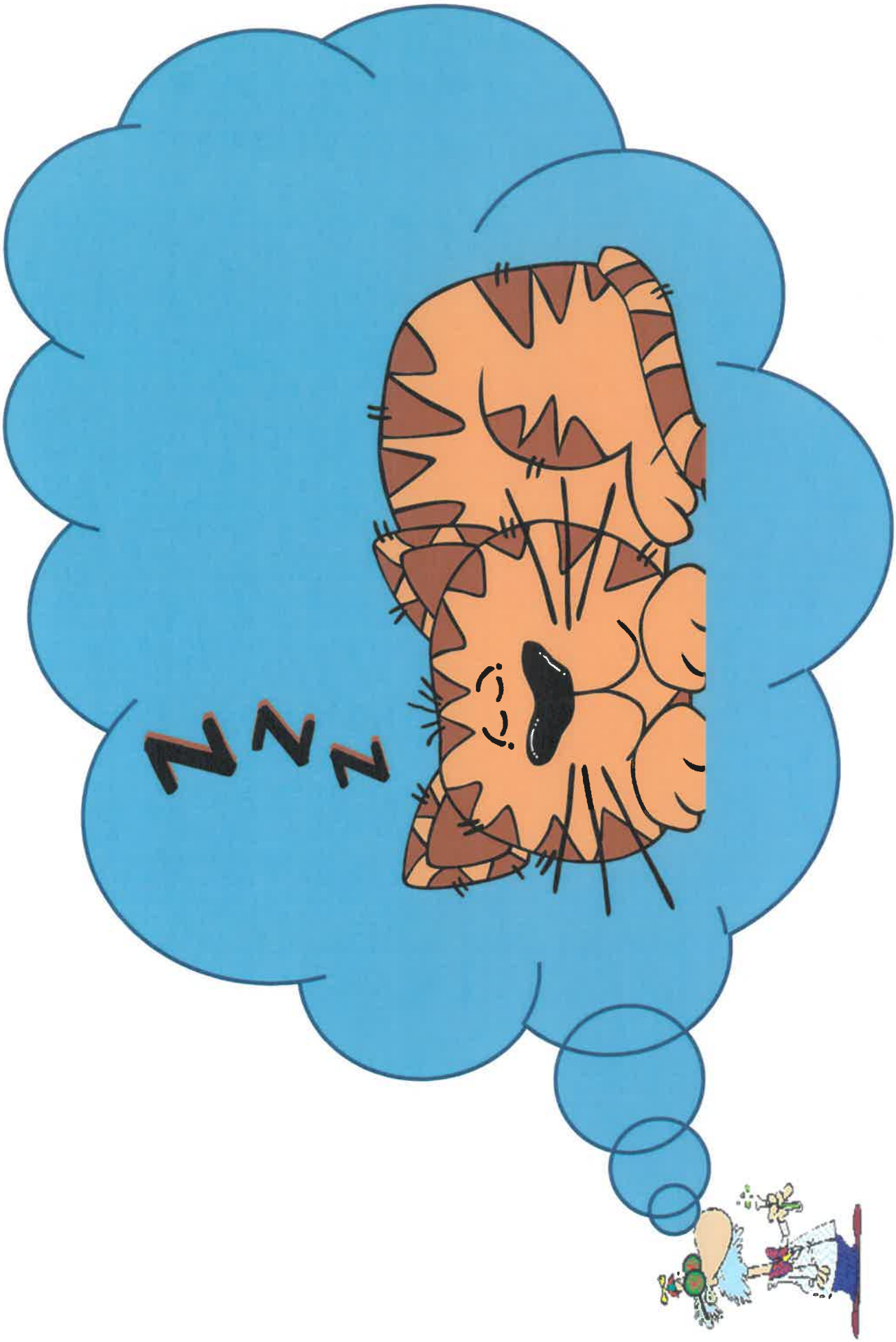
Nutrition



Walk



Rest and
recovery
time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