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University woodwind students' playing-related injuries: a pilot study investigating beliefs, attitudes and prevention strategies

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Abstract

Background: University woodwind students commonly experience playing-related injuries, however little is known about musicians' beliefs and attitudes regarding playing-related injuries.

Objective: To investigate the beliefs and attitudes of university woodwind students regarding playing-related injuries, and the prevention strategies they use.

Methods: An online survey was sent to the woodwind students at a university. Descriptive statistics were used to report the data.

Results: All participants wanted to learn more about injury prevention, with practical teaching formats preferred. Participants most frequently recognised playing-related factors, such as having poor posture/ hand position, or playing with discomfort, as risk factors for playing-related injuries, with playing-related prevention strategies, such as warming up and having regular practice breaks, being most commonly utilised. Students generally recognised their susceptibility to playing-related injuries; however the potential impact of these was under-recognised. Many agreed with the proposed benefits of changing practice structure and posture/ hand position, as well as exercises, with some barriers identified.

Conclusion: This pilot study revealed that these students are likely to respond favourably to an injury prevention program which incorporates exercises, advice regarding posture/ hand position and practice structure, particularly if presented in practical formats.

Key words: musician, musculoskeletal, pain, attitudes, beliefs, prevention

Introduction

The second most common cause of years lived with disability globally are musculoskeletal disorders (Vos et al., 2016), making them an important public health issue. The prevalence of musculoskeletal symptoms in musicians is reportedly high (Bragge, Bialocerkowski, & McMeeken, 2006; Kok, Huisstede, Voorn, Schoones, & Nelissen, 2016; Silva, Lã, & Afreixo, 2015; Stanhope & Milanese, 2016), including amongst university woodwind students (Ackermann, Kenny, & Fortune, 2011; Branfonbrener, 2009; Cayea & Manchester, 1998; Kreutz, Ginsborg, & Williamon, 2008). While there is little specific research regarding the risk factors for musculoskeletal symptoms in this sub-population of musicians, it has been suggested that symptoms among musicians may be associated with poor posture (Ackermann et al., 2011; Blanco-Piñeiro, Díaz-Pereira, & Martínez, 2017; Hartsell & Tata, 1991), poor playing structure/ duration (Ackermann et al., 2011; Hartsell & Tata, 1991; Manchester & Park, 1996; Zaza, 1992; Zaza & Farewell, 1997; Zetterberg, Backlund, Karlsson, Werner, & Olsson, 1998), and/or a lack of physical exercise (Ackermann et al., 2011; Roach, Martinez, & Anderson, 1994). Addressing these factors should be considered as part of a program to reduce playing-related injuries (PRIs) in university woodwind students.

University education may provide an ideal

opportunity for musicians to learn skills regarding PRIs. This is a time when they have committed to a career as a musician, and when they are more likely to be interested in learning how to prolong and advance their careers, than school students. Practice time and playing intensity is likely to increase for students commencing their university studies; hence their interest in preventing musculoskeletal symptoms may develop. PRI prevention education would occur at a time when students are more likely to have the flexibility in their schedules and the time to make changes to their playing and lifestyles to reduce their PRI risk prior to being exposed to the high demands of being professional musicians.

Recent studies investigating the effectiveness of education programs for university music students, which have included musculoskeletal health have reported significant changes in awareness of musculoskeletal problems (Laursen & Chesky, 2014), self-reported competency in advising students with musculoskeletal problems (Laursen & Chesky, 2014), warm-up behaviour (Martín López & Farías Martínez, 2013), and physical problems (Martín López & Farías Martínez, 2013). Whilst these findings are promising, the need for such a course to be conducted locally and how this should be delivered had to be considered, by investigating the experiences, attitudes and beliefs of the target group.

The Health Belief Model (HBM) provides a framework for understanding how individuals make decisions regarding their health (Janz & Becker, 1984), and may assist in guiding interventions aimed at promoting health (Talbot & Verrinder, 2010). The HBM has four key concepts:

perceived susceptibility (how likely they think they are to get the condition),

perceive d severity of a condition (the impact they think the condition would have on their lives),

perceived benefits (what they think the positive outcomes of the behaviour change could be), and

perceived barriers (the things they think will make it difficult to change their behaviour) (Talbot & Verrinder, 2010).

The likelihood of an individual changing their health behaviour is influenced by these perceptions, in addition to modifying variables (e.g. age, peer pressure, experience with or knowledge of the condition) and cues to action, which are influences that make an individual aware of how they feel about the condition (e.g. advice from others, articles, and mass media campaigns) (Talbot & Verrinder, 2010). It may be used as a tool for better understanding woodwind students, allowing their beliefs to be considered in the development of an injury prevention program.

The HBM was reportedly used in the development of Zander, Voltmer and Spahn's (2010) prevention program for musicians, as well as injury prevention programs for other activities (Finch, White, Twomey, & Ullah, 2011; Trifiletti, Gielen, Sleet, & Hopkins, 2005; Wasilewski, Mateo, & Sidorovsky, 2007). Despite this, there have been no quantitative studies reporting health beliefs amongst musicians regarding PRIs. By better understanding music students' beliefs, we can improve the likelihood of an education program's success. Other factors, such as students' current PRI preventive behaviours, their experiences with PRI and their management, their attitudes regarding PRI and perceived risk factors are also important considerations in designing such a program. These factors may influence an individual's response to experiencing a PRI, their level of support for others with PRIs, and their uptake of suggested PRI preventive strategies.

The aim of this study was to investigate university woodwind students' beliefs and attitudes regarding PRIs. The experiences of these students with PRIs and PRI management was also investigated in this study and has been reported elsewhere (Stanhope, Milanese & Grimmer, 2014).

For the purposes of this study, PROs refer to "musculoskeletal symptoms, like pain, discomfort, tingling, numbness or weakness that prevent you from playing at your normal level" (Stanhope, Milanese & Grimmer, 2014), which was a modification of Zaza, Charles, & Muszynski (1998) playing-related musculoskeletal disorder definition(.

The modified terminology and definition were made based on feedback from musicians when piloting the questionnaire (Standhope, Milanese & Grimmer, 2014).

Methods

Ethics approval

Ethics approval was obtained from the University of South Australia's Human Ethics Committee (protocol number: P060/10).

Sample and recruitment

The study group were undergraduate or Vocational Education and Training classical, woodwind students from one university. A short presentation was given to students at a woodwind technique and repertoire class (40 students), where the study was briefly explained and students were told they would receive an email with a link to the survey from the Head of Performance shortly thereafter. Students were given one week to complete the survey after the email was sent, with a reminder email sent two days prior to the end of the survey. All students were eligible to participate, provided they were aged 18 years or older, and all were included in the analysis, provided they completed at least some of the questions pertaining to PRIs (i.e. not just the demographic information section of the survey).

Survey

A survey was developed for this project, as no existing published survey was suitable to meet the aims of this study. The survey and details of its development have been reported elsewhere (Stanhope, Milanese & Grimmer, 2014). In short, the questionnaire was administered via SurveyMonkey (Palo Alto, VA, USA; www.surveymonkey.com), and was pilot tested prior to this project. Multiple choice and open answer responses were included, as well as Likert Scales (anchors are reported with the results).

Data analysis and reporting

All data were manually entered into a purpose-built Microsoft Excel© spreadsheet, and descriptive statistics were used for all quantitative analysis. Open answer responses were optional in the questionnaire, and have been reported here as quotations, with no qualitative analysis conducted.

Results

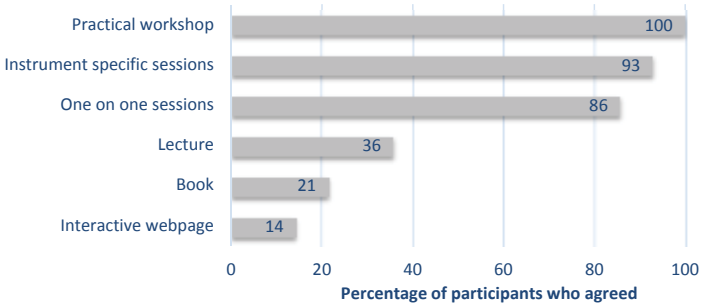
Fourteen students responded, however only 13 were included as one student only completed the demographic information section of the survey and was therefore excluded. This sample represented 35% of all undergraduate and VET woodwind students at the university. Most participants were female (77%), with flute (46%), clarinet (15%), saxophone (8%), oboe (8%), bassoon (8%) and recorder (15%) majors participating, however 71% played more than one instrument. 46% of participants were aged 18-19 years, 23% 20-24 years and 31% 25 years or older. 14% were enrolled in Certificate IV, 79% Bachelor Degree and 7% Honours. 62% of participants had experienced a PRI (see Stanhope, Milanese & Grimmer, 2014, for further detail).

All participants reported that they wanted to learn more about preventing PRIs, and believed that it should be part of their university education. Only 43% however thought there should be a whole course devoted to musician's health at university. Practical formats of presentation for a PRI prevention program were popular (Figure 1).

Playing with discomfort and poor posture/ hand position were perceived to have an extreme impact on PRI risk, whilst carrying their instruments was perceived to have little impact on their PRI risk (Figure 2). One participant stated "In regards to moving equipment if you're not using safe lifting techniques you are extremely likely to retain [sic] an injury but I think its [sic] more to do with the way youre [sic] lifting" (Participant 13).

All participants were engaged in at least one PRI prevention strategy at the time of the survey.

Figure 1: Preferred format for a. playing-related injury prevention program



Playing-related prevention strategies were most commonly trialled, with more than 80% having tried regular practice breaks, warming up and stopping playing with discomfort (Figure 3). The majority of those who had attempted warming up (100%), stretching (70%), muscle resistance exercises (67%), regular massage (65%), aerobic exercise (55%) and Pilates (53%) were still partaking in these prevention activities at the time of the survey. A participant stated "A fair amount of these require considerable amounts of time and money, this limits access considerably, particularly for students" (Participant 6). The highest ratings of perceived effectiveness were for Alexander technique, regular

Figure 2: Perceived risk factors for playing-related injuries. Rating anchors: 1 'Not at all' to 5 'Extreme impact'.

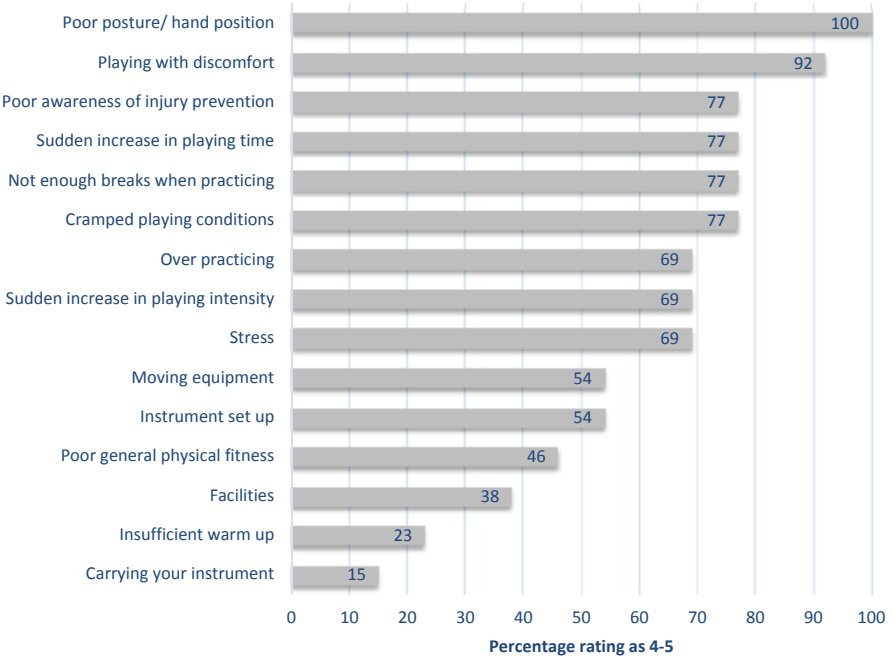
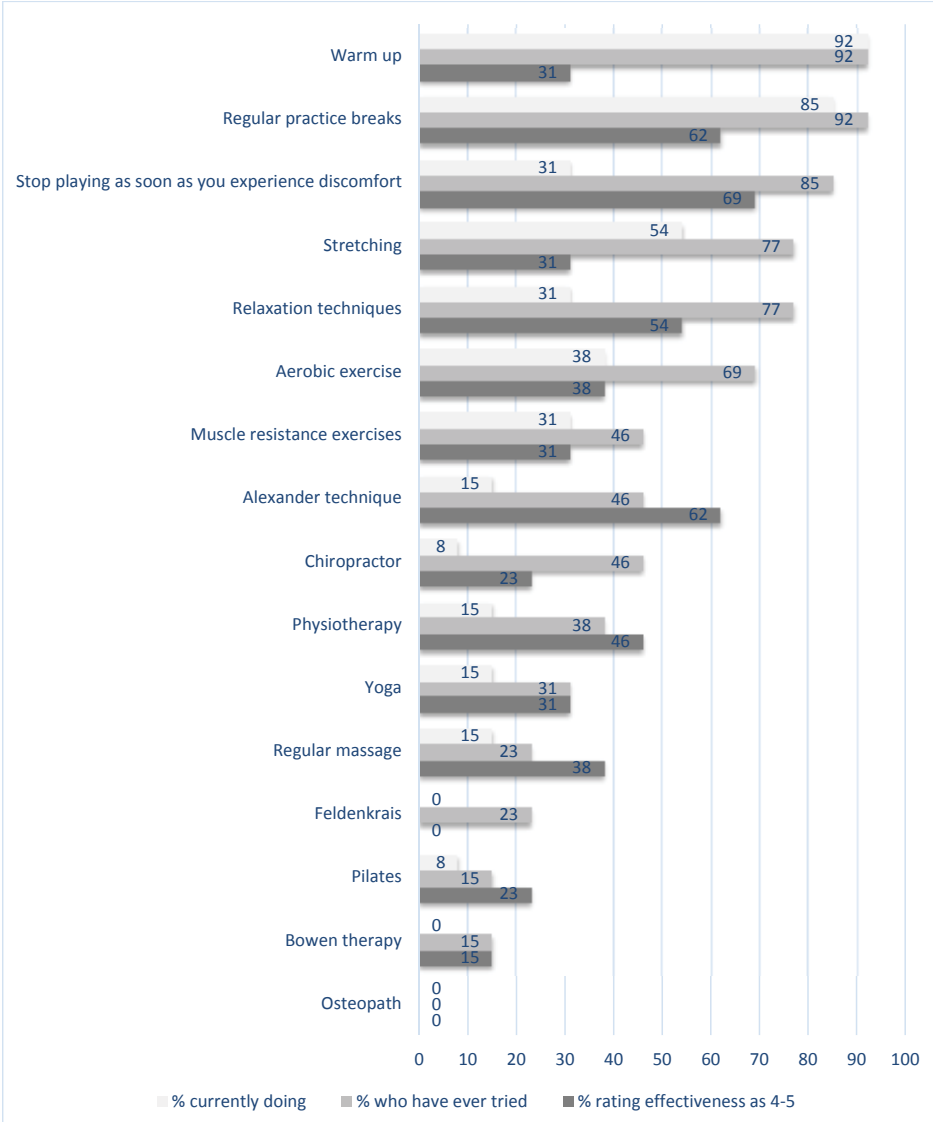


Figure 3: Perceived effectiveness, current and previous utilisation of preventive strategies. Rating anchors: 1 'No effect' to 5 'Will completely prevent an injury'. N.B. Some effectiveness ratings had missing responses. All percentages calculated with 13 as the denominator.



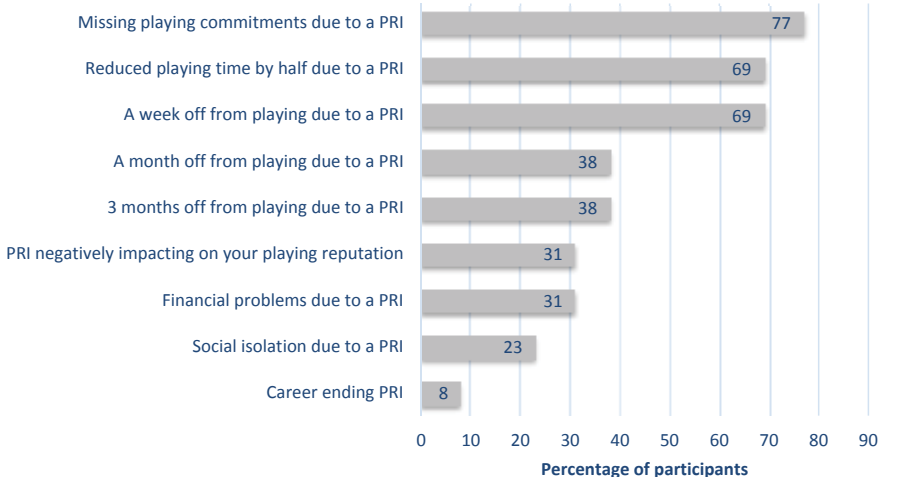
practice breaks, relaxation techniques and stopping playing with discomfort, whereas Bowen therapy, osteopathy and chiropractic therapies rated poorly (see Figure 3). One participant commented "Difficult to say as I think no matter what the approach, its (sic) effectiveness is influenced by the way it is embraced and incorporated into daily routine" (Participant 6).

Perceived susceptibility increased over time with all participants believing there was some chance of sustaining a PRI in the next six months. The percentage rating their chance as 4-5 (rating anchors 1 'No chance' to 5 'Extremely likely') increased overtime with 15% for the next six months, 38% next 12 months, 46% next five years and 77% ever. In terms of perceived severity, the majority rating their change of missing playing commitments, reducing playing time by half and having a week off from playing due to a PRI as 4-5 (rating anchors 1 'No chance' to 5 'Extremely likely') (Figure 4); however some of the participants believed that there was no chance that a PRI would result in them missing playing commitments (8%), having three months off from playing (23%), experiencing social isolation (31%) or financial problems (15%), or ending their careers (23%).

All participants reported that starting to get symptoms, knowing someone who has experienced a PRI, and gaining advice from their teaching either has or would prompt them to change their behaviour to assist in reducing their risk of experiencing a PRI. In terms of factors which had changed behaviour, over half reported that experiencing symptoms/ PRI had changed their behaviour (Figure 5). Two students commented, "I had tendinitis in my right hand which forced me to give up oboe. As a result I am very wary now about injury with my other instruments" (Participant 2), and "Like I said before I do currently have an injury and am regularly having physiotherapy so I am very aware about many techniques – stretching, stop playing when feeling discomfort etc" (Participant 13).

The majority of participants strongly agreed (rating 3-4; rating anchors -4 'completely disagree' to 4 'completely agree') that doing exercises would help reduce their PRI risk, learning more about good posture/ hand position would make them better teachers and that changing their posture/ hand position would have a positive effect on their playing in the long term; however the majority also strongly agreed that they need to practice for long

Figure 4: Perceived severity. PRI: Playing-related injury. Rating anchors: 1 'No chance' to 5 'Extremely likely'



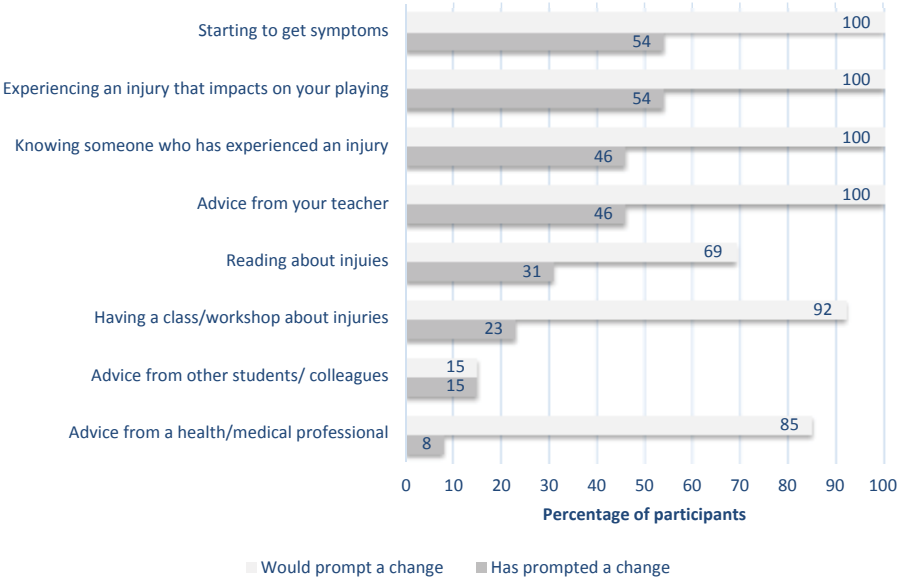
Note: PRO refers to playing-related injury.

Table 1: Perceived benefits and barriers.

Strategy	Beliefs		% strongly agreeing (rating 3 to 4)	% strongly disagree (rating -3 to -4)
Exercises	Perceived benefits	Doing exercises will help decrease my PRI risk	62	0
		Doing exercises will help prolong my career	31	0
		Doing exercises will help improve my posture	38	0
		Doing exercises will improve my playing	23	0
		Doing exercises will improve my playing reputation	23	8
	Perceived barriers	I don't have the time to do exercises	8	15
		If I found time to do exercises I may as well practice	0	8
		The discomfort and fatigue from doing strengthening exercises will make it hard to practice afterwards	0	23
		There is no space to do exercises at university	0	38
		Doing exercises is embarrassing	8	77
Posture/ hand position	Perceived benefits	Learning more about good posture/ hand position will make me a better teacher	69	0
		Changing my posture/ hand position will have a positive effect on my playing long term	54	0
		Having a good posture/ hand position will improve the way my performance is perceived, even if the sound is the same	46	0
		Changing my posture/ hand position will prolong my career	46	0
		Changing my posture/ hand position will help decrease my PRI risk	31	0
	Perceived barriers	Changing my posture/ hand position would affect my playing negatively in the short term	15	15
		It would take too much time to change my posture/ hand position	0	31
		It is too difficult to change my posture/ hand position	0	38
Practice structure	Perceived benefits	Changing my practice structure will help decrease my PRI risk	31	0
		Changing my practice structure will help improve my playing	23	0
		Changing my practice structure will help prolong my career	31	0
	Perceived barriers	I need to practice for long durations to be able to perform for long durations	54	0
		My duration of practice in one session is dictated by practice room availability	38	23
		It is too difficult to change my practice structure	0	46

PRI: playing-related injury. Rating anchors: -4 'Completely disagree' to 4 'Completely agree'

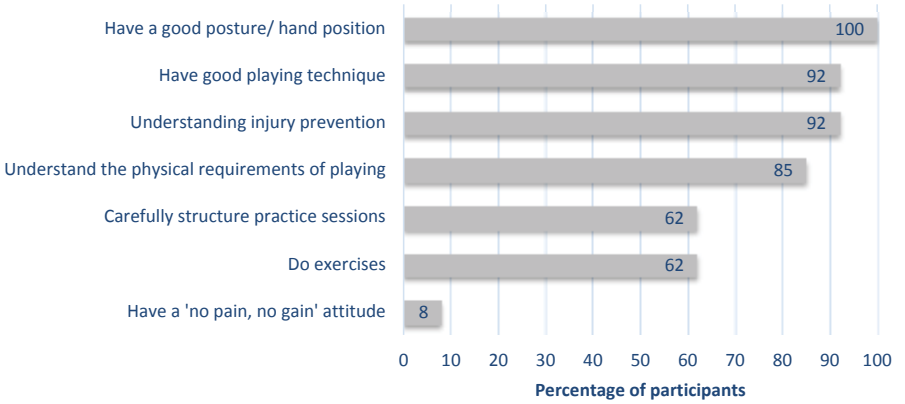
Figure 5: Cues to action



durations to be able to perform for long durations (Table 1).

The most important factors for being a 'good' musician were having a good playing technique, hand position and posture (Figure 6), whilst having a 'no pain, no gain' attitude was considered 'not at all important' by 69% of participants. One participant (Participant 5) stated "Just on the last one: some discomfort is probably benign, and stopping practice at any sign of discomfort would probably overly limit practice time. Being able to tell the difference between mere discomfort and

Figure 6: Factors for a 'good' musician. Rating anchors: 1 'Not at all important' to 5 'Extremely important'



potential injury would be the trick though." This statement is likely to be referring to the 'no pain, no gain' attitude. This was the only comment provided.

The majority of participants strongly agreed (rating 3-4, rating anchors -4 'completely disagree' to 4 'completely agree') that musicians should understand injury prevention, those who have experienced an injury are at increased risk of future injury, that health professionals need a good musical understanding to advise and treat musicians, that injuries can be prevented, and that they would tell their teacher if they were injured. The majority strongly disagreed (rating -4 to -3, rating anchors -4 'completely disagree' to 4 'completely agree') that musicians who have had time off because of an injury must not want to be a musician bad enough, that musicians who have had time off due to injury should not be professional musicians, that injuries reflect poorly on the teacher, that they would not tell another musician if they had an injury and that injuries are an excuse for time off (Table 2).

Discussion

This pilot study has provided insight into the attitudes, beliefs and practices of university woodwind students regarding PRIs, which may be used to develop an injury prevention program for these students, which had not been previously investigated.

All participants were interested in learning more about injury prevention; however it is acknowledged that the sample only reflects 35% of the target population. A recent Czech study (Ioannou & Altenmüller, 2015) reported that most (68.7%) university music students believed they needed to know anatomy and physiology, with 43.4% reporting that this knowledge would have allowed them to avoid their playing-related pain. Overall, they reported that most (61%) students believed that courses in physiology and anatomy would be a 'good idea' (Ioannou & Altenmüller, 2015); hence the findings of the present study are similar to those of international studies.

Despite a general push in universities to increase

Table 2: Attitudes regarding playing-related injuries.

Quality	% strongly agreeing (rating 3 to 4)	% strongly disagree (rating -3 to -4)
Musicians should understand injury prevention	77	0
Musicians to have had an injury are at risk of future injury	69	0
Health professionals need a good musical understanding to advise and treat musicians	62	0
If I had an injury I would tell my teacher	54	8
Injuries can be prevented	54	0
Teachers should teach injury prevention	46	8
Injury prevention is the responsibility of the individual musician	46	0
Injury prevention is the responsibility of the university	15	31
Injury prevention is the responsibility of the teacher	8	15
Discomfort is a normal part of playing	0	38
I would not tell another musician if I had an injury	0	54
Injuries are an excuse for time off	0	62
If a musician has an injury it reflects poorly on their teacher	0	69
Musicians who have had an injury should not be professional musicians	0	77
Musicians who have had time off because of an injury must not want to be a musician bad enough	0	92

Rating anchors: -4 'Completely disagree' to 4 'Completely agree'

online education, only 14% of participants reporting that they wanted an injury prevention program to include online aspects. Generally, participants indicated that they wanted an injury prevention program to be presented in practical forms, such as instrument-specific workshops. This may be because musicians are used to learning predominantly in such a format, or the recognition that practical skills, such as posture education, and exercises, would be part of such a program. This finding may explain the poor uptake, and completion of a recent online *Sound Performers musicians' health course* (Ingle, 2013). Whilst online resources may play a part in educating musicians about PRIs, practical sessions should also be included.

All participants believed that poor posture/ hand position was a risk factor for PRI, and over 75% also agreed that playing with discomfort, sudden increases in playing time, not having enough breaks when practicing playing in cramped conditions and having poor awareness of injury prevention were risk factors. This is similar to findings of other studies of university music students where the majority of students have reported that poor posture, technique flaws, long hours of practice, sudden increases in playing time, and insufficient breaks were a likely cause of their symptoms (Ackermann et al., 2011), and inappropriate technique and/or abnormal body posture being the main cause of symptoms (Ioannou & Altenmüller, 2015).

Overall, playing-related prevention strategies were more popular than exercises, with consultation with health professionals being the least common type of strategy tried to prevent PRIs. There may a perception that health professionals treat PRIs rather than also playing a role in the prevention of these. More than 50% of participants reported that they believed regular practice breaks, stopping playing with discomfort, relaxation techniques and Alexander Technique were effective (rating anchors 4-5, 1 'no effect' to 5 'will completely prevent an injury') in preventing PRIs. Interestingly, more participants rated Alexander Technique, physiotherapy, regular massage and Pilates as effectives (ratings 4-5) than had tried these strategies. This indicates that influences other than just personal experience may determine perceptions regarding the effectiveness of preventive strategies, and may include the views of teachers' and other students. This finding also suggests that there are barriers for these musicians to accessing these services. These barriers may include time, finances and the inconvenience of attending appointments (Park, Guptill, & Sumsion, 2007).

Interestingly, while 92% reported warming-up to prevent PRIs at the time of the study, only 31% rated the effectiveness of this as 4-5 (rating anchors 1 'no effect' to 5 'will completely prevent an injury'). Furthermore, only 23% rated insufficient warm ups as 4-5 (rating anchors 1 'not at all' to 5 'extreme impact') in terms of being a contributing factor for PRIs, which is similar to previous reports of only 25% of participants reporting insufficient warm up as a likely contributing factor for their symptoms. The high percentage engaging in this activity, despite the low ratings of effectiveness, may indicate that music students are warming up primarily for reasons other than PRI prevention, such as warming up the instrument.

All participants believed that they may experience a PRI within in the next six months, with the perceived likelihood of experiencing a PRI increasing with longer time periods. Whilst the perceived susceptibility is therefore high, perceived severity was low, with some participants believing there was no chance of missing playing commitments, having three months off from playing, experiencing social isolation or financial problems or ending their careers, despite each of these being reported in other studies (Abréu-Ramos & Micheo, 2007; Ackermann, Driscoll, & Kenny, 2012; Barton et al., 2008; Chimenti et al., 2013; Guptill, 2011a, 2012; Guptill, 2011b; Kaneko, Lianza, & Dawson, 2005; Leaver, Harris, & Palmer, 2011; Levy & Lounsbury, 2009; McCready & Reid, 2007; Paarup, Baelum, Holm, Manniche, & Wedderkopp, 2011; Rickert, Barrett, & Ackermann, 2014; Vaiano,

Guerrieri, & Behlau, 2013). With the exception of social isolation, each of these potential issues were reported within this same sample (Stanhope, Milanese & Grimmer, 2014).

In terms of cues to action, there were wide discrepancies between the percentage of participants who believed a cue would prompt an action, and the percentage who changed behaviour following a cue; an intention-behaviour gap. Similar gaps have been reported for a range of intentions/behaviours, including in workplace health and safety (Sheeran & Silverman, 2003). The gap may also indicate that participants have not been exposed to the cues. Despite this, 100% of participants reported that they would change their behaviour following symptoms or a PRI; however only 54% had, despite 62% of the sample having experienced a PRI (Stanhope, Milanese & Grimmer, 2014). Similarly, 85% indicated that advice from a health/medical professional would prompt a change, with only 8% reporting that this had prompted a change, despite more than 8% reporting they had seen a chiropractor (46%), physiotherapist (38%), massage therapist (23%), Feldenkrais practitioner (23%), Pilates instructor (15%), or Bowen therapist (15%). While this may be due to differences in beliefs regarding future action, and reality, it may also suggest that these professionals did not provide participants with advice regarding PRI prevention.

The results indicate that musicians are likely to engage with exercises with the intention of reducing their PRI risk; however for changes to posture/ hand position and practice structure only 31% of participants for each strategy strongly agreed that these changes would reduce their PRI risk. Explanations of how these changes may reduce their PRI within a prevention program would be expected to increase the likelihood of behaviour change. For posture/ hand position also mentioning the other benefits musicians agreed with, such as changes having a positive impact on playing in the longer term, may also improve the uptake of suggested changes.

With regards to changing practice structure, a clear barrier was identified, with 54% strongly agreeing that they need to practice for long durations to perform for long durations. Improving performance endurance through practicing is important, however most performances are less than an hour in duration, with final performance examinations within the Bachelor of Music program at this particular university only being 25-minutes duration. Despite this, students are generally told to practice for at least three-hours a day, in addition to classes, and rehearsals. There is no clear evidence regarding the ideal amount of practice that music students should do, with the quality of practice perhaps being a more important factor for success. This should be discussed in the program, to ensure that students are informed about the benefits and potential risks of practicing for longer durations, particularly without breaks. Where longer performances are scheduled, for instance, Bach's *St. Matthew's Passion*, music students should be given sufficient warning to allow them to pace increases in practice time to meet the requirements of longer works, as well as guidance as to how to safety make these changes.

Whilst other studies have reported that a 'no pain, no gain' attitude is common amongst music students (44-79%) (Bruno, Lorusso, & L'Abbate, 2008; Lockwood, 1988; Shoup, 1995), 69% of participants reporting that this was 'not at all important' (rating of 1) for a 'good' musician, and only 8% rating is a 4-5 (scale from 1 'not at all important' to 5 'extremely important'). Having a good posture/ hand position and good playing technique were viewed as important by 100% and 92% of participants, respectively. Encouragingly, 92% also believed understanding injury prevention and 85% believed understanding the physical requirements of playing to be important qualities of a 'good' musician. These musicians are therefore likely to engage with an injury prevention program, as these are seen as important qualities.

A key finding of this study was the perception among 62% of participants that health professionals

need a good musical understanding to advise and treat musicians (median rating 3-4, rating anchors -4 'completely disagree' to 4 'completely agree'). The perception that health professionals do not sufficiently appreciate the needs of musicians has been reported previously (McCready & Reid, 2007; Park et al., 2007), along with reports of unsatisfactory treatment, such as being told to stop playing (Park et al., 2007; Zaza et al., 1998), to 'swap hands' (Chong, Lynden, Harvey, & Peebles, 1989), to change instruments (Chong et al., 1989), or being told to 'get a real job' (Zaza et al., 1998). These perceptions may also explain why seeking advice from a health professional is not readily utilised as a strategy to minimise the risk of PRIs. Musicians reportedly want health professional to understand the importance of playing to them, and who expressed sympathy and compassion, without disregard for their career choices (Guptill, Zaza, & Paul, 2005). They have reported wanting those treating them to understand the work of musicians, including the environment, the instrument, and the stressful nature of music (Guptill et al., 2005; Park et al., 2007). It is unrealistic to expect all health professionals to specifically train in musicians' healthcare, particularly in Australia where there are relatively small numbers of musicians, who are geographically dispersed, in comparison with those in various areas of Northern America and Europe. Ensuring that musicians are aware of which health professionals understand musicians in one strategy which may assist in improving consultation with health professionals, particularly for the prevention of PRIs. This may be achieved through lists of health professionals who have a special interest in musicians' health being distributed to university music students. Engaging these health professionals in the teaching of a prevention program for PRIs may also enable music students to identify potential health professional who meet their needs.

The potential role for teachers in teaching injury prevention was recently identified by Ioannou and Altenmüller (2015). In the present pilot study all participants reported that advice from their teacher would prompt a change to prevent injury, and 46% reported that such advice had resulted in a change. It is imperative that not only students are taught about injury prevention, but also those teaching them. Not only will this serve to protect teachers, but means that they are able to provide appropriate advice regarding prevention and management of PRIs, as well as recognising when referral to a health professional may be the most appropriate course of action. This will also ensure that the advice provided by teachers does not conflict with that provided in injury prevention programs.

As this is a pilot study of classical woodwind students, with a small sample size, the findings cannot be generalised to other groups. This is the first study to quantitatively investigate these attitudes, beliefs and practices amongst university woodwind students, and provides an appropriate method which could be adapted for other musical groups.

Conclusion

University woodwind students want to learn more about injury prevention, with a preference for practical formats of education. Most participants believed that aspects of playing, such as sudden increases in practice time, were risk factors for PRIs, and playing-related prevention strategies were the most commonly utilised in this group. Whilst there was recognition of their susceptibility to PRIs, the potential impacts of PRIs were under-recognised. In general, students agreed with the proposed benefits of exercises, changing posture/hand position and changing practice structure, with few barriers to these changes identified. There is a need for this population and their teachers to be educated about injury prevention, and for health professionals to understand the unique needs of this population.

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