

Injury Profile of Musicians in the Bloemfontein-based Free State Symphony Orchestra: A Short Report

ABSTRACT: Similar to professional athletes, musicians are required to perform optimally. Few studies have been conducted to clarify the nature of injuries associated with musicians. This study aimed to determine the types of injuries and their prevalence amongst the musicians of the Free State Symphony Orchestra (FSSO), contributing factors, the musicians' response to injury, and their perception of physiotherapy. Forty-five members of the FSSO participated in this descriptive study. Analysis of data included frequencies and percentages for categorical data and percentiles for continuous data. Thirty-eight (84.4%) participants reported injuries related to playing their instruments. Insufficient resting periods during playing sessions (70.3%), continuing to play while experiencing symptoms (63.2%) and performing the same movement repetitively (64.9%) were identified as the perceived risk factors in the development of symptoms. Seventeen (44.7%) participants indicated that they did nothing to relieve their symptoms, while 34.2% sought physiotherapy treatment, 31.6% took medication to alleviate their symptoms and 31.6% reduced their playing hours. Majority of participants (75%) felt that their symptoms could be relieved by physiotherapy. Injuries amongst musicians result from a combination of factors such as posture, repetitive movements and fatigue. Possible physiotherapeutic intervention identified included educating musicians on the advantages of early management of injuries in extending their professional careers.

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INTRODUCTION

Robert Schumann wrote in 1838 (as cited by Fedak, 2006), "All the music is complete and alive within me, so that I wish to effortlessly breathe it out, but now I can hardly bring it forth; I trip over one finger with the other. This is truly frightening and has already caused me much pain". Schumann's statement epitomises the emotion of every musician that suffers from a condition that impedes their ability to express their musical idea. Very few studies have been performed to investigate the prevalence of injuries occurring in musicians. A survey of the International Conference of Symphony and Opera Musicians showed that 76% of symphony and opera musicians had at least one problem severe enough to interfere with their ability to perform (Fedak 2006).

No reports on studies relating to the type and prevalence of injuries in musicians in South Africa could be located.

The aim of our investigation was to determine the types of injuries and their prevalence amongst the musicians of the Free State Symphony Orchestra (FSSO) located in Bloemfontein, South Africa, the perceived contributing factors, the responses of the musicians to injury, and their perception of physiotherapy. By determining the injury profile of musicians, existing treatment regimens could be adapted specifically for musicians to enhance the effectiveness of treatment.

METHODOLOGY

Study design

An objective, descriptive study by means of a structured interview using a questionnaire, was conducted. The questionnaire was compiled from available literature (Bragge & Bialocerkowski 2006; Steven & Gregory 2002; Westrup & Harrison 1976; Zaza 1998), as well as verbal information provided by the

Music Department of the University of the Free State (UFS), and the director of the FSSO.

Pilot study

After obtaining approval from the Ethics Committee of the Faculty of Health Sciences, UFS, a pilot study on six students enrolled at the Music Department of the UFS, who were not current members of the FSSO, was performed to enhance the face- and content validity of the questionnaire.

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Study population

The study population included all individuals who were members of the FSSO at the time of the study. Of the n=50 members of the orchestra, n=45 (90%) participated in the study.

Method

The structured interviews using the developed questionnaire were conducted in the presence of two researchers in order to ensure objectivity of questioning and to verify the information obtained. All information provided by the participants was handled with strict confidentiality.

Statistical analysis

Statistical analysis of data was done by the Department of Biostatistics, UFS, using frequencies and percentages for categorical data and percentiles for continuous data as well as 95% confidence interval for the prevalence.

RESULTS

Forty-five participants (n=45) took part in the study, of whom 60% were female. The age distribution ranged between

18 and 76 years (median age 24 years). Thirty-eight (84.4%) musicians of the FSSO reported injuries perceived to be related to playing their instrument (95% confidence interval for the prevalence [71.2% ; 92.3%]), while 44.7% were also injured during an unrelated activity. The majority of participants 64.7% indicated that playing their instruments exacerbated their symptoms.

The rest of the results presented in this paper will be for the 38 musicians whose injuries were associated with playing their instruments. With regard to the nature of symptoms, aching pain was reported most frequently (47.4%), followed by deep pain (44.7%), stiffness (39.5%), numbness (31.6%) and stabbing pain (31.6%). It was found that 47.4% of participants experienced symptoms of injury during and after playing the instrument, suggesting that the musician's musical performance was possibly affected by the injury. Insufficient resting periods during sessions of play (70.3%), continuing to play while experiencing symptoms (63.2%) and performing the same movement

repetitively (64.9%) were perceived as the major risk factors contributing to the development of symptoms.

The results indicated that 44.7% of participants did nothing in response to the symptom. Only 34.2% of respondents indicated that they sought physiotherapy treatment, while 31.6% took medication to alleviate their symptoms and 31.6% reduced their playing hours. Forty percent of all the participants were aware of the Alexander technique as a means to prevent and/or alleviate play-related injuries and discomfort. Nevertheless, only five of these 18 participants indicated that they applied the technique while playing their instruments. A general opinion exists within the performance arts that "the show must go on" and that pain and other symptoms are a normal part of their playing career. It is possibly with this mindset that some participants (21.1%) did not respond appropriately to their injuries. The majority of participants (75%) felt that their symptoms could be relieved by physiotherapy. However, only 49% of musicians who suffered from play-

Table 1: The number of years participants played their instruments and number of hours per week spent on practicing.

Instrument	Frequency	%	Position while playing (%)			Years playing		Hours played per week	
			Sitting	Standing	Combination	Range	Median	Range	Median
Bass drum	1	2.2		2.2		36	36	11	11
Bassoon	2	4.4	2.2		2.2	12-26	19	5-14	9.5
Cello	5	11.1	11.1			14-54	34	4-21	16
Clarinet	3	6.6	4.4		2.2	8-30	9	6-12	8
Cymbals	1	2.2	2.2			16	16	1	1
Double bass	1	2.2	2.2			39	39	10	10
Flute	4	8.8	4.4		4.4	7-25	15	7-20	10
French horn	1	2.2	2.2			10	10	5	5
Oboe	1	2.2	2.2			28	28	1	1
Piano	13	28.9	28.9			10-70	20	1-72	8
Saxophone	3	6.7	6.7			5-14	10	1-8	2
Snare drum	2	4.4		4.4		16-36	26	11-20	15.5
Timpani	2	4.4	2.2	2.2		16-36	26	1-11	6
Triangle	2	4.4		4.4		16-36	26	1-11	6
Trombone	2	4.4	4.4			3-8	5.5	5-7	6
Trumpet	6	13.3	2.2	2.2	8.9	7-12	9	6-20	11.5
Viola	6	13.4	6.7		6.7	2-52	24.5	2-28	13
Violin	14	31	4.4	2.2	24.4	6-70	14	0-25	8
Other	6	13.3	11.1	2.2		2-40	10.5	3-48	10

related injuries sought physiotherapy treatment, and 76.9% of them indicated that physiotherapy helped to alleviate their symptoms.

DISCUSSION

Musicians as a group of professionals may incur various injuries. Some musicians, however, assume that injuries are a normal part of performance and find ways to mask the effects of a developing injury (Marxhausen 2006). Our findings indicated that 63.2% of the participants in this study continued to play while experiencing symptoms, supporting Marxhausen's statement.

Repetitive strain due to prolonged playing hours may contribute to poor posture and subsequently to possible injury. This correlating risk factor was identified in studies done by Castleman (2002), Fourie (2006) and Milanese (2000), and could be considered as a predisposing factor for developing some sort of injury related to playing an instrument. In addition, faulty technique, poor posture, and physical and playing-related stress may also contribute to symptoms. Poor fitness levels or physical condition present definite risk, as structural weakness and other physical limitations may predispose musicians

to PRMDs (Davies & Mangion 2002; Meinke 1998).

Our observation that only five of 18 participants who were aware of the Alexander technique actually applied this technique could possibly be attributed to many of them never receiving proper training in the use of the technique. The benefits of the Alexander technique could be used by physiotherapists to address re-education of posture, retraining of muscles involved in core stability and pain relief. (Jones s.a.).

The high prevalence of injuries found in our study (i.e. 89.6%) corresponded with a survey by the International Conference of Symphony and Opera Musicians, which showed that 76% of symphony musicians had at least one problem severe enough to interfere with their ability to perform (Fedak 2006). The repetition of specific movements and extended periods of continuous play also increase the likelihood of play-related injury (Dawson 2002). However, this statement is negated by Fourie (2006) and Meinke (1998), who argue that repetition by itself is insufficient to cause symptoms, but that tension while playing the instrument stimulates a co-contraction that usually inhibits the smooth performance of rapid motion

and should be minimised to prevent the occurrence of injuries. The nature of the musicians' symptoms reported in this study was possibly repetitive strain injuries that developed as a result of maintaining a strenuous position for lengthy periods of time. There is a direct relationship that exists between the number of hours played and the development of injury (Fourie 2006; Yeung et al 1999).

A need for physiotherapeutic intervention was identified, and should include proactive steps to limit and prevent the occurrence of repetitive stress injuries in the musician's life. Early management of injuries should be advocated to possibly extend the career of musicians. Education to musicians in the form of short information sessions, brochures, advocating regular physical exercises, warm-up and stretching regimes, warrant attention (Castleman 2002; Davies et al 2002; Yeung et al 1999).

The Alexander Technique is often recommended by music instructors to enhance the playing of the instrument, reduces strain on the musician and promotes the unlearning of unwanted habit patterns. The Alexander technique as a means to prevent and/or relieve play-related injuries should be further researched and could possibly be considered to be incorporated into physiotherapeutic treatment regimes as a useful tool in treating musicians' injuries. (Jones s.a.). Further research could also be done to investigate the effect or influence of poor posture and core stability, reduced endurance of muscles and poor proximal control on the development of play-related injuries and whether a direct association exists between the physical fitness and/or strength of the musician and their predisposition to injuries.

Certain limitations of the study need to be noted. The questionnaire did not make provision to record the duration of symptoms, whether symptoms were acute or chronic, whether symptoms prevented the musician from performing and if so, for how long. The link between a specific site of injury and the type of instrument played was also not determined, nor did the questionnaire enquire whether a physician was consulted due

Table 2. Action taken by participants (n=38) in response to symptoms experienced while playing their instruments.

Response to symptoms	Frequency n (%)
Did nothing	17 (44.7)
Sought physiotherapy	13 (34.2)
Took medication	12 (31.6)
Reduced playing hours	12 (31.6)
Consulted a doctor	9 (23.7)
Had diagnostic imaging	5 (13.2)
Used braces, splints or other orthosis	4 (10.5)
Took time off (not playing instrument)	5 (13.2)
Sought alternative treatment	2 (5.3)
Followed an exercise or posture programme	2 (5.3)
Underwent surgery	2 (5.3)
Modified playing technique	1 (2.6)
Alexander technique (n=18)*	5 (27.8)

*Eighteen participants were aware of the Alexander technique, of whom five applied the technique.

to the injury. These issues should be taken into account in future studies.

In conclusion, the observations made in this study indicate a relatively high prevalence of injuries among members of the Free State Symphony Orchestra. Injuries to musicians result from a combination of factors such as posture, repetitive movements and fatigue. An awareness program could contribute to musicians' understanding of the role physiotherapy could play in their careers, especially when problems with injuries are addressed early.

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