



Physical performance and musculoskeletal disorders: Are musicians and sportspeople on a level playing field?



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ABSTRACT

Objectives: To discuss the differences in the prevention and management of musculoskeletal disorders (MSDs) between musicians and sportspeople, the differences in the acceptance of and healthcare access for these populations regarding MSDs, and to propose ways in which musicians, music educators, health professionals, and employers of musicians can draw upon the culture and practices of sportspeople and teams, to assist musicians in better preventing and managing MSDs.

Methods: A narrative review, drawing upon music and sports medicine research.

Results: There are differences in the musicians' MSD risk perception, in comparison with sportspeople, potentially due to the different nature of MSDs, early experiences with MSDs, and media coverage of sports MSDs. Unlike musicians, sportspeople gain MSD prevention advice at all levels, and they have access to health professionals with sports-specific training who are often associated with the team. Some of the practices of sports teams and players can be applied to musicians. For instance, musicians should be trained about their risk of MSDs, and how to prevent and manage them at all levels of playing, and seeking appropriate, early management should be supported and encouraged. Mandating some strategies may be appropriate. Health professionals also need more access to musician-specific training and specialisation pathways.

Conclusion: There are many differences between musicians and sportspeople in terms of MSDs. Where possible, the positive aspects of sports training and culture, should be adopted by musicians to reduce the risk of MSDs, and provide better support to those who experience these disorders.

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1. Introduction

Musculoskeletal disorders (MSDs) are commonly experienced by musicians (Bragge, Bialocerkowski, & McMeeken, 2006a; Silva, Lã, & Afreixo, 2015; Stanhope & Milanese, 2015), including children learning musical instruments (Ranelli, Smith, & Straker, 2011). Despite this, musicians are rarely taught from the beginning of their studies, or even into professional careers, how to prevent and manage MSDs.

A 'culture of silence' exists for musicians around MSDs (Bragge, Bialocerkowski, & McMeeken, 2006b; Guptill, 2011), which may create a barrier to accessing social and organisational support, appropriate healthcare, and implementing changes to their playing to assist in preventing and managing MSDs. These MSDs may have devastating consequences for the musician; including a negative impact socially (Guptill, 2011; McCready & Reid, 2007;

Rickert, Barrett, & Ackermann, 2014a) and emotionally (Bragge et al., 2006b; McCready & Reid, 2007; Rickert et al., 2014a; Rickert, Barrett, & Ackermann, 2014b), a negative impact on non-musical activities (Bragge et al., 2006b; Chimenti, Van Dillen, Prather, Hunt, Chimenti, & Khoo-Summers, 2013; Paarup, Baelum, Holm, Manniche, & Wedderkopp, 2011), missing playing commitments, work and study (Ackermann, Driscoll, & Kenny, 2012; Chimenti et al., 2013; Paarup et al., 2011; Park, Guptill, & Sumsion, 2007; Stanhope, Milanese, & Grimmer, 2014), and resulting in financial problems (Stanhope et al., 2014). In order to reduce the prevalence and impact of MSDs amongst musicians, the practices of other groups at risk of MSDs, such as sportspeople, may be used to guide MSD prevention and management for musicians.

The similarities between sportspeople and musicians have previously been acknowledged, with musicians being referred to as musical or instrumental athletes (Ackermann & Driscoll, 2013; Moran, 1992; Quarrier, 1993; Schaefer & Speier, 2012). The similarities between sportspeople and musicians include commencing training at a young age (Elbaum, 1986; Quarrier, 1993), practicing or performing daily (Dick, Berning, Dawson, Ginsburg, Miller, &

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Shybut, 2013), being highly competitive (Dick et al., 2013; Elbaum, 1986; Quarrier, 1993), requiring a high level of skill (Quarrier, 1993) and physical capacity (e.g. endurance, coordination) (Quarrier, 1993), practicing for many hours (Kreutz, Ginsborg, & Williamon, 2009), playing through pain (Dick et al., 2013), and both being at high risk of career threatening MSDs (Dick et al., 2013; Quarrier, 1993).

Despite these similarities, sportspeople receive more training regarding MSDs than musicians (Clark & Lisboa, 2013), are aware of their MSD risk (Finch, White, Twomey, & Ullah, 2011), and have access to specialised medical and healthcare support (Bennett & Grant, 2004; Brukner & Khan, 2007; Dick et al., 2013; Orchard & Brukner, 2005). Musicians, educators, employers and health professionals, may therefore be able to draw upon some of the practices from sports to improve MSD outcomes for musicians.

This review aims to discuss the differences in MSD risk perception, acceptance, prevention and management, and healthcare access between sportspeople and musicians, and propose ways in which musicians, their educators, employers and health professionals may draw upon the culture and practices of sportspeople and teams to assist musicians in better preventing and managing MSDs. This review takes an Australian perspective, however it is likely that many of these issues are relevant within an international context. Throughout the review the term MSD has been used to include any condition, degenerative or inflammatory, of the structures of the musculoskeletal system, including muscles, joints, ligaments, peripheral nerves, tendons and supporting blood vessels (Safe Work Australia, 2014).

2. Methods

This is a narrative review, which draws upon research in the fields of music and sports medicine. A narrative review is a suitable approach given the broad nature of the review aim. No systematic search was conducted; however targeted searches were conducted through library databases and Google Scholar to identify studies of musicians and/or sportspeople, relating to the review themes. Additionally, the reference and citation (Web of Science and Google Scholar) lists of relevant studies were screened to identify other potentially relevant resources. The titles of studies published in *Medical Problems of Performing Artists* were also screened. These resources were supplemented with grey literature.

3. Findings

3.1. Musculoskeletal disorder risk perceptions and acceptance

MSD risk perception has implications for health behaviours, with the perceived susceptibility and perceived severity of a health threat (e.g. MSDs), influencing the likelihood of engaging in a health behaviour, as proposed in the Health Belief Model (Janz & Becker, 1984). MSD risk perception may also influence the acceptability of experiencing MSDs, for the individual, their colleagues, and employers. Despite the high prevalence of MSDs amongst musicians (Bragge et al., 2006a; Silva et al., 2015; Stanhope & Milanese, 2015), it has been suggested that engaging in musical activity does not tend to be viewed as dangerous (Zaza, Charles, & Muszynski, 1998). In contrast, over 25% of parents, in a recent Australian study, reported discouraging their children from playing sport due to the potential risks (Boufous, Finch, & Bauman, 2004), and 77.7% of senior Australian Football League (AFL) players agreeing that there is a high risk of lower limb injuries in AFL (Finch et al., 2011). While there is no comparable published data for musicians, it would appear that musicians are less likely to expect to experience a MSD, when compared with sportspeople.

One key difference between musicians and sportspeople is the type of MSDs they tend to sustain. MSDs can be broadly classified as traumatic or atraumatic/overuse. Traumatic MSDs are likely to present with a range of clearly visible signs, like swelling, bruising, malformation, and antalgic postures and movements (e.g. limping), whereas atraumatic MSDs may present with no visible signs. The majority of musicians' MSDs are classified as 'overuse' (Lederman, 2003), whereas sportspeople may experience both traumatic or atraumatic MSDs. For instance, in high school students from the United States of America, overuse injuries accounted for <20% of MSDs for most sports (cheerleading, boys' football, soccer, basketball, wrestling, baseball, ice hockey, lacrosse, and volleyball, and girls' soccer, volleyball, basketball, softball, field hockey, gymnastics, and lacrosse), with the only exceptions being swimming (55.7% for boys and 47.7% for girls) and track and field (28.5% for boys and 36.8% for girls) (Schroeder et al., 2015); hence for the majority of sports most MSDs are traumatic.

Having clearly visible signs, as with the traumatic MSDs more likely to occur in sports, validates the MSDs to observers, making it easier for people to draw upon social supports, report their MSDs and to consult health or medical professionals as they do not have to prove the existence of the problem. The visible nature of these traumatic MSDs may also increase the perceived susceptibility and severity of MSDs to sportspeople, as well as improving the acceptability of experiencing these MSDs. The differences in the types of MSDs experienced by sportspeople and musicians, may contribute to differences in the culture around these MSDs, including the perceived risk, acceptability, preventive strategies used access to healthcare.

Our early experiences shape our attitudes and practices as adults. In learning fundamental skills, like walking, climbing and catching, children are exposed to the idea that falling or being hit may result in pain and potentially other signs and symptoms. Additionally, most children and adolescents are exposed to sporting MSDs involving trauma (Andersen, Roessler, & Eichberg, 2013; Schroeder et al., 2015). Many people have experienced delayed onset muscle soreness following physical activity (Cheung, Hume, & Maxwell, 2003), an atraumatic MSD which may lead to an appreciation that physical activity, such as that performed in sports, may lead to MSDs. In contrast, the cumulative exposures which are likely to have led to MSDs in musicians, such as repetitive movement, prolonged sitting or standing, and prolonged, awkward positioning of the arms, may be less well understood by the musician themselves, as well as the general public, making it more difficult to appreciate the MSD risks associated with participating in music, when compared with sports.

The perception of sportspeople being at high risk of MSDs is further supported by media coverage. Sports reports often include descriptions of the MSDs of professional sportspeople and their prognosis; supported by interviews with coaches, managers, health professionals, and the sportspeople themselves. For example, over a one year period, in four major Australian newspapers (*The Age*, *The Advertiser*, *The Sydney Morning Herald* and *The Australian*) over 250 articles were published regarding the retirement of sportspeople, some of which related to MSDs (Cosh, Crabb, & LeCouteur, 2013). These reports, particularly when provided by experts in the field, further justify the existence of sports-related MSDs, as well as the risks involved in playing sport. There is often also footage of the MSD occurring, and the aftermath (e.g. pictures of swelling, bruising, a limping sportsperson, or a sportsperson with a brace or crutches), which further supports the public perception of sportspeople having a high MSD risk.

In Australia, television and radio news reports, and newspapers typically include a sports section, with little attention given to the arts. With the exception of those performing popular music, professional musicians in Australia do not share the same public profile

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