Musicians' occupational health in South Africa: Promoting awareness and understanding in music teaching

by Dr Bridget Rennie-Salonen (Stellenbosch University) and
Dr Frelét de Villiers (University of the Free State)

1. Introduction

The field of musicians' occupational health falls within performing arts medicine (PAM), also known as performing arts health (PAH).[1] There are PAH associations in more than 17 countries, many of which publish peer-reviewed journals, promote research, and accommodate clinical centres.[2] Healthier practices in music teaching are advocated, for example through the formation in 2012 of the Special Interest Group for Musicians' Health and Wellness by the International Society for Music Education (ISME).[3] Yet in mainstream music teaching in South Africa (SA), there is limited awareness, understanding and application of the research recommendations in musicians' health and well-being. This article will present an overview of the field of musicians' health, aiming to provide insight into its benefits and importance, and provide suggestions for SA music teachers on optimal performance and injury prevention strategies.

2. Musicians as athletes

Like athletes, musicians require physical and mental fitness for optimal performance. They have similar demands in terms of sensorimotor coordination, neuromusculoskeletal abilities, mental skills, ongoing practice, performance flair and personality, competition, discipline, and frequent evaluation.[4] Although the injury risk factors are comparable, sports injuries are mainly caused by high impact and physical contact, whilst

[1] Dommerholt 2009.
[2] Harman 2010.
[3] Rickert, Barrett & Ackermann 2015.
[4] Dick, Berning, Dawson, Ginsburg, Miller & Shybut 2013; Kenny & Ackermann 2009.

BRIDGET *Rennie-Salonen*

Flautist, Dr Bridget Rennie-Salonen is a Postdoctoral Fellow and Part-time Lecturer at Stellenbosch University. As a researcher and practitioner in performing arts health, with expertise in somatic learning, she represents SA on the international Musicians' Health Literacy Consortium. Her PhD focused on musicians' occupational health curriculum content, implementation, and assessment. Whilst Solo Principal Flute of the Cape Town Philharmonic Orchestra, Bridget received the prestigious Carklin Award for Artistic Excellence. Recent awards include Fiesta, Silver Ovation, Fanie Beetge Academic Prize, and Oppenheimer Memorial Trust awards. She has appeared as soloist with several SA orchestras, is principal flute of the Cape Town Festival Orchestra, regular guest principal flute in the Free State Symphony Orchestra, and Baroque flautist in Camerata Tinta Barocca. Bridget is highly sought after as a flute teacher, and many of her students have excelled nationally and internationally, several occupying positions in SA orchestras. www. bridgetrs.com

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musicians' injuries are usually related to the repetitive movement requirements.[5] This element of repetition is equivalent to conditions treated in occupational medicine, an established field focusing on the workplace health of, for example, machinists, computer keyboard operators, and industrial workers.[6]

The psychology of performance for athletes and performing artists is alike, and many sports psychology approaches are transferable to the performing arts.[7] Similar to professional athletes, the competition and perfectionism experienced by professional musicians cause anxiety, tension, and high stress levels, often diminishing the original intrinsic enjoyment of performance.[8] However, despite the physical and psychological demands of advanced musical performance, "there has traditionally been little or no health education or services to support this population, in great contrast to the sporting population".[9]

3. Musicians' performance-related health problems

It is well known that music-making enhances well-being, quality of life, brain interconnectivity, neuroplasticity, auditory-sensory-motor integration and expressive, artistic, and emotional communication skills.[10] Although music is acknowledged to have these multiple lifelong health benefits, musicians, regardless of age, genre, and cultural background, are susceptible to performance-related health problems (PRHP).[11] Yet there is stigma and concealment; a culture of 'privacy' surrounding musicians' occupational pain which is accepted as 'normal' or misunderstood as a weakness.[12] Musicians' PRHP therefore can be professionally, emotionally, personally, socially, and financially devastating.[13]

The prevalence rates of PRHP in musicians of diverse genres range roughly from 40% to 90%.[14] (The exact statistics vary due to differences in study methods and design.[15]) Research on pre-tertiary and tertiary student

[5] Schaefer & Speier 2012.
[6] White, Hayes, Jamieson & Pilowsky 2003; Manchester 2013.
[7] Hays 2002.
[8] Oakland, Macdonald & Flowers 2014.
[9] Ackermann, Driscoll & Kenny 2012:181.
[10] Altenmüller, Ioannou & Lee 2015.
[11] Ackermann et al. 2012; Mehrparvar, Mostaghaci & Gerami 2012; Leaver, Harris & Palmer 2011; Hoppmann 2010; Guptill & Golem 2008; Foxman & Burgel 2006.
[12] Andersen, Roessler & Eichberg 2013.
[13] Stanhope, Milanese & Grimmer 2014; Guptill 2011
[14] Heredia, Hinkamp, Brodsky & Llapur 2014; Mishra, De, Gangopadhyay & Chandra 2013; Kim, Kim, Min, Cho and Choi 2012; Mehrparvar et al. 2012; Guptill 2008; Wu 2007; Foxman & Burgel 2006; Sadeghi, Kazemi, Shooshtari, Bidari & Jafari 2004; Raeburn, Hipple, Delaney & Chesky 2003; Spahn, Hildebrandt & Seidenglanz 2001; Brodsky 1995; Newmark & Salmon 1990; Fishbein, Middlestadt, Ottati, Strauss & Ellis 1988.

FRELÉT *de Villiers*

Dr Frelét de Villiers is a senior lecturer at the Odeion School of Music (UFS). She lectures in piano, arts management, music pedagogy and is a supervisor for post-graduate students. Her passion is the use of technology in the educational environment. She developed a note learning app for beginner piano learners namely *PianoBoost* (free download on Google Play). She received a third prize for the most innovative project and was chosen as one of 20 top entrepreneurs for the South African Swizz entrepreneurship programme. She has been a guest speaker at several symposiums and conferences and was invited to give presentations at the 17th World Conference on Mobile and Contextual Learning in Chicago in 2018 and the IAMLearn conference in Delft in 2019. She has published several accredited articles and chapters in international book publications. She is an examiner for UNISA music examinations and an adjudicator for various Eisteddfods.

musicians of varying genres and instruments has found prevalence rates of PRHP similar to, and in some cases higher, than amongst professionals.[16] Musicians' PRHP are commonly grouped in four distinct categories: neuromusculoskeletal health, hearing conservation, vocal health, and psychological health.

3.1 Neuromusculoskeletal health

The majority of PRHP amongst musicians are neuromusculoskeletal.[17] The term performance-related musculoskeletal disorder (PRMD) is used for these conditions. A recent international review demonstrated a 62% to 93% lifetime prevalence of PRMD among professional musicians.[18] Roughly 80% of musicians (including music teachers and school-going musicians) will experience PRMD in their lifetime.[19] Surveys verify that part-time and amateur musicians are also affected.[20] A detailed study and in-depth literature review on all the kinds of PRMD in specific populations of musicians can be found in Salonen (2018).

3.2 Hearing health

Musicians have unique occupational hearing needs, as they require simultaneous protection coupled with optimal use in an environment that presents noise hazards.[21] The statistics on noise-induced hearing loss (NIHL) amongst musicians of diverse genres and ages are concerning. High prevalence rates of NIHL are reported, ranging from 43% to 74%.[22] NIHL is caused by excess sound exposure (measuring both the decibel level and the exposure duration together) in both performance and practice and it is permanent and irreversible. Orchestral musicians are routinely exposed to sound levels higher than safety standards.[23] Most music teachers and high school band directors, with their combined teaching and ensemble coaching load, also exceed the limit of safe noise exposure.[24] Similarly, student musicians' exposure exceeds safety standards due to the cumulative sound exposure from all musical activities and personal listening devices.[25]

Education in hearing conservation, such as environmental changes, use of hearing protective devices, and regular audiometric assessments, is recommended.[26] Reducing sound volume in rehearsals, gigs, and in clubs is paramount. There is debate about the use of earplugs, because professionals and students report their dissatisfaction when using them, there is a general lack of compliance amongst musicians, and because there are alternative sound controlling measures that can be implemented.[27] Notably, to reduce noise exposure for themselves and their students, music educators should be trained in the use of teaching and conducting techniques which manage dynamic levels.[28]

3.3 Vocal health

Maintenance of vocal health is also an important topic in musicians' occupational health. Vocal problems such as hoarseness, irritation, strain, vocal pain, and vocal nodules are experienced by singers and music teachers.[29] Age-related vocal and hormonal changes, type of repertoire, vocal technique, self-care, and side effects of medication are therefore important considerations for singers.[30] Music teachers also need voice care knowledge because of the extensive speaking and singing aspects of their work.[31] Incorrect vocal technique causes strain and vocal misuse; therefore optimal technique and proper voice training is crucial.[32] Studies on the prevalence of vocal problems found that more than half of student singers reported a current voice issue, and that about two thirds of singing teachers had experienced a vocal problem.[33] Vocal disorders amongst contemporary commercial vocalists are often ignored resulting in long term detrimental consequences.[34]

[16] Lonsdale & Boon 2016; Rodríguez-Romero, Pérez-Valiño, Ageitos-Alonso & Pértega-Díaz 2016; Baadjou, Verbunt, Van Eijsden-Besseling, Huysmans & Smeets 2015; Ioannou & Altenmüller 2015; Kok, Nelissen & Huisstede 2015; Vinci, Smith & Ranelli 2015; Stanhope, Milanese & Grimmer 2014; Árnason, Árnason & Briem 2014; Nawrocka, Mynarski, Powerska-Didkowska, Grabara & Garbaciak 2014; Kok, Vlieland, Fiocco & Nelissen 2013; Hildebrandt, Nübling & Candia 2012; Brandfonbrener 2009; Kenny, Martin & Cormack 2009; Barton, Killian, Bushee, Callen, Cupp, Ochs, Sharp & Tetrault 2008; Williamon & Thompson 2006; Britsch 2005.

[17] Schuele & Lederman 2004; Zuskin, Schachter, Kolcić, Polasek, Mustajbegović & Arumugam 2004; Rosset-Llobet, Rosinés-Cubells & Saló-Orfila 2000; Fishbein et al. 1988.

[18] Kok, Huisstede, Voorn, Schoones & Nelissen 2016.

[19] Berque, Gray Mcfadyen 2016; Ackermann, Kenny, O'Brien & Driscoll 2014; Fotiadis, Fotiadou, Kokaridas & Mylonas 2013; Edling & Fjellman-Wiklund 2009; Abreu-Ramos & Micheo 2007.

[20] Kok, Groenewegen, Huisstede, Nelissen, Rietveld & Haitjema 2018; Mehrparvar et al. 2012; Buckley & Manchester 2006; Morse, Ro, Cherniak & Pelletier 2000.

[21] Sataloff, Sataloff & Hawkshaw 2010; Henoch & Chesky 1999.

[22] Ackermann, Kenny, O'Brien & Driscoll 2014; Schink, Kreutz, Busch, Pigeot & Ahrens 2014; Miller, Stewart & Lehman 2007; Kähäri, Zachau, Eklöf & Möller 2004; Chesky & Henoch 2000.

[23] Laitinen 2005.

[24] Hayes 2013; Maffei, Iannace & Masullo 2011; Behar, Macdonald, Lee, Cui, Kunov & Wong 2004; Owens 2004.

[25] Olson, Gooding, Shikoh & Graf 2016; Callahan, Lass, Foster, Poe, Steinberg & Duffe 2012; Walter 2009; Henoch & Chesky 2000.

[26] Callahan et al. 2012; Santucci 2009.

[27] Chesky, Pair, Yoshimura & Landford 2009.

[28] Hayes 2013; Barlow 2010; Chesky 2010.

[29] Rodríguez-Lozano, Sáez-Yuguero & Bermejo-Fenoll 2011; Hackworth 2007.

[30] Brandfonbrener 2010.

[31] Morrow & Connor 2011.

[32] Sataloff & Hawkshaw 2010.

[33] Ziegler & Johns 2012.

[34] Erickson 2012; Gilman, Merati, Klein, Hapner & Johns 2009.

3.4 Psychological health

Musicians' psychological well-being must also be addressed. Positive and rewarding components of music-making are the meaningful musical experiences which create positive emotions and engagement, support self-concept and identity, and nurture accomplishment, goals, and freedom of expression.[35] Psychosocial stress factors include the need to maintain high skill levels, solitary repetitive practice, continuous self-evaluation, public exposure, erratic schedules, financial insecurity,[36] unhealthy lifestyle, lack of psychological support,[37] and absence of medical insurance,[38] with reports of elevated anxiety, depression, alcohol, and drug use.[39] The correlation of the musculoskeletal and psychological factors in the manifestation of PRHP is also acknowledged.[40] This has led to the development of integrated biopsychosocial approaches abroad, culminating in educational, support, and clinical interventions.[41]

Music performance anxiety (MPA) is a prominent topic in the research on musicians' psychological health. Affecting about two-thirds of musicians, the adolescent age group, particularly females, is vulnerable.[42] MPA comprises cognitive, physiological, and behavioural aspects, with complex, individualised and variable causes.[43] It is important to distinguish between the facilitative and debilitating aspects of MPA, in that the performance may either be enhanced or impaired, depending on the perception, types and combinations of MPA symptoms. For example, the physiological arousal symptoms such as increased heart rate and muscular tension can be perceived as energising and facilitative or as negative and debilitating.[44]

4. Contributing risk factors

It is imperative to know that most musicians' PRHP are preventable. The identification of risk factors is therefore essential to lay the foundation for prevention interventions. The numerous and interactive risk factors for PRHP are often related to the body and movement, to practice habits, as well as to psychosocial and environmental aspects.

Posture and movement, such as repetitive movements, inadequate physical condition, anatomical characteristics, and poor posture are all contributing risk factors. Although repetition and overuse contribute to almost all neuromusculoskeletal problems, intensity, efficiency, coordination, and quality of movement are also involved.[45] This is because musicians' continuous, precise, repetitive, and refined movements (for extended durations), will become detrimental if not carried out with efficient biomechanics, appropriate exertion, awareness, and ease. For example, studies show that dynamic postures are more efficient than static postures, due to the small-scale movements which decrease restrictive muscle tension. They therefore prevent the fatigue caused by tense static postures, which initiate a sequence of compromised movement patterns.[46]

Other major considerations are those associated with practice behaviours, including sudden increase in practice duration or intensity, lack of rest breaks, poor practice habits, and lack of warm-up strategies. PRHP are also linked to the instrument itself, such as instrument set-up, instrument changes, inefficient technique, as well as carrying heavy instruments and equipment. Environmental factors have an impact on musicians' health and well-being, yet the musician may not have control or agency in these matters. These include demanding schedules, bad seating, ambient temperature, poor lighting and score legibility, and challenging repertoire.[47]

Psychosocial risk factors such as depression, anxiety, MPA, stress, social phobia, perfectionism, competition and erratic employment all play a part in the development of PRHP.[48] Psychological stress leads to heightened muscle tension, which means that psychosocial issues influence physical playing-related problems. It is clear that physical and psychological aspects function interactively.[49]

[35] Ascenso, Williamon & Perkins 2017.
[36] Vaag, Bjørngaard & Bjerkeset 2016; Vervainioti & Alexopoulos 2015; Rickert, Barrett & Ackermann 2013; Kenny & Ackermann 2009.
[37] Vaag, Giæver & Bjerkeset 2014; Hernandez, Russo & Schneider 2009; Raeburn 1999.
[38] Herer 2005; Kenny & Asher 2016.
[39] Kenny, Driscoll & Ackermann 2012; Raeburn 2000.
[40] Ackermann et al. 2014; Kenny & Ackermann 2013; Kaneko, Lianza & Dawson 2005; Davies & Mangion 2002.
[41] Ackermann, Kenny, Driscoll & O'Brien 2017; Ackermann, Kenny, Driscoll & O'Brien 2015; Raeburn 2000; Bultman 2007.
[42] Nussek, Zander & Spahn 2015; Brugués 2011.
[43] Vaag et al. 2016; Osborne, Greene & Immel 2014; Hoffman & Hanrahan 2012; Kenny et al. 2012; Boucher & Ryan 2011; Kenny 2011.
[44] Osborne et al. 2014; Sasso 2010; Spahn, Echternach, Zander, Voltmer & Richter 2010; Yoshie, Kudo & Ohtsuki 2008.
[45] Buchanan & Hays 2014; Rietveld 2013; Steinmetz, Seidel & Muche 2010; Bejjani, Kaye & Benham 1996.
[46] Kenny & Ackermann 2009.
[47] Chan, Driscoll & Ackermann 2014; Mehrparvar et al. 2012; Meidell 2011; Hoppmann 2010; Ackermann 2010; Dommerholt 2009; Kenny & Ackermann 2009; Barton et al. 2008; Abreu-Ramos & Micheo 2007.
[48] Chan & Ackermann 2014; Rosset-Llobet et al. 2000.
[49] Kenny & Ackermann 2013; Rietveld 2013; Ackermann 2010; Brandfonbrener 2010; Zander, Voltmer & Spahn 2010; Levy, Lounsbury & Kent 2009; Akel & Düger 2007.

5. Prevention of performance-related health problems

Risk factors were outlined in order to understand the basis for the prevention of PRHP. Prevention information can further be divided into aspects like focusing on healthy and productive practice approaches, postural aspects and physical condition, the teacher's pivotal role, as well as performance psychology.

Musicians' approaches to practice are crucial in maintaining optimal occupational health. Researchers agree on the importance of developing efficient practice habits with breaks, pacing and consistency to prevent injury and achieve the best results.[50] Deliberate practice, which involves sustained motivation, focused attention, parental and environmental support, and the skill of constantly evaluating and improving playing during practice, is necessary.[51] Mental practice, including visualisation, imagery, and reviewing the score, is an important part of both prevention and skill acquisition.[52]

Several authors provide valuable information resources on musicians' postural requirements.[53] Postural training, together with the biomechanics and techniques of mastering the instrument, is an essential component of PRMD prevention and optimising performance.[54] Poor posture can be improved with somatic methods, such as the Alexander Technique, the Feldenkrais Method, and Body Mapping for Musicians, which develop body awareness and alignment by developing proximal stability and enhanced postural muscle sequencing.[55] Posture may also benefit from ergonomic modifications, such as customised chin and shoulder rests for the upper strings, and a variety of support straps and devices for woodwinds and guitars.[56] These devices can be helpful, but only if utilised together with correct set-up, technique, and awareness of posture. Addressing whole body use, with proprioceptive and sensorimotor training, as well as integrating auditory input with movement, enhances technical and artistic performance capacity.[57]

Maintaining musicians' healthy physical conditions includes strength, flexibility, endurance, and cardiovascular fitness.[58] Exercise programmes designed for musicians have had positive results on aspects such as muscle strength for instrument support and posture, improved movement ease, lowered rates of perceived exertion, and reduced PRMD frequency and intensity.[59] In addition to exercise, sensible lifestyle habits involving healthy nutrition, hydration, and sufficient sleep should also be encouraged. Warm-up strategies and appropriate stretches may help prevent PRMD, as they improve blood flow, facilitate nerve gliding and mobility, and improve flexibility.[60]

The relationship with the music teacher has a significant influence on a developing musician. Balancing the physical, mental, and emotional challenges, and incorporating both physical and psychological preventative strategies in the music learning process, are integral parts of the music teacher's role.[61] It is therefore essential that music teachers support their students in developing a healthier attitude to playing. This comprises skills such as graded increases in practice time, recognising fatigue, using effective practice methods, developing good technique with attention to posture, body awareness, and musculoskeletal biomechanics, understanding rest, and knowing that playing in pain is unacceptable. At festivals, young musicians often have to endure lengthy and intense rehearsal schedules. Teachers and conductors can be educated to change these practices, be effective role models, and reduce students' risk of injury.[62] Research shows that studio teachers are usually the primary source of support on health-related issues, but the concern is that they may not have adequate knowledge.[63] Although well-meaning with regard to health advice, most music teachers are often informed only by their own experience and opinions.[64]

Despite increased awareness, acceptance, and knowledge, PRHP prevalence is still high, which shows that preventative education is paramount. Considering their central role, music teachers should be taught about

[50] Altenmüller & Ioannou 2016; Ackermann et al. 2015; Dick et al. 2013; Guptill & Zaza 2010; Hoppmann 2010; Dawson 2006.
[51] Ericsson, Krampe & Tesch-Römer 1993.
[52] Bernardi, De Buglio, Trimarchi, Chielli & Bricolo 2013; Guptill & Zaza 2010; Dommerholt 2009; Freymuth 1999.
[53] Shoebridge, Shields & Webster 2017; Baadjou, Verbunt, Van Eijsden-Besseling, Samama-Polak, De Bie & Smeets 2014; Lee, Carey, Dubey & Matz 2012; Guptill & Zaza 2010; Steinmetz et al. 2010.
[54] Kenny & Ackermann 2009.
[55] Shoebridge et al. 2017; Baadjou et al. 2014; Rietveld, Macfarlane & de Haas 2013, Lee, Carey, Dubey & Matz 2012; Foxman & Burgel 2006; Shafer-Crane 2006.
[56] Dommerholt 2009; Foxman & Burgel 2006.
[57] Ackermann 2010.
[58] Rietveld et al. 2013; Lee et al. 2012; Shafer-Crane 2006; Brandfonbrener 2001.
[59] Chan et al. 2014; Wilke, Priebus, Biallas & Froböse 2011; Ackermann 2010; Kava, Larson, Stiller & Maher 2010.
[60] Cooper, Hamann & Frost 2012; Lee et al. 2012; Guptill & Zaza 2010; Kenny & Ackermann 2009; Foxman & Burgel 2006; Shafer-Crane 2006.
[61] Altenmüller & Ioannou 2016; Nagel 2009.
[62] Horvath 2008.
[63] Clark & Lisboa 2013; Norton 2013; Williamon & Thompson 2006.
[64] Pierce 2012; Palac & Grimshaw 2006.

musicians' health.[65] Musicians' occupational health coursework must be part of music teacher training so that young musicians can be reached.[66] This is emphatically stated by Rickert and colleagues (2015:2): "The music education sector is well placed to be at the forefront of such injury prevention efforts because it is in music schools that students adopt the attitudes, values and behaviours that will define their professional careers".

Likewise, the prevention of psychological issues such as MPA begins with integrating constructive approaches to performance psychology within music teaching.[67] Research shows that perfectionist striving and harsh self-critique are associated with many musicians' chronic emotional distress and MPA.[68] Therefore, fostering the enjoyment of music-making together with providing appropriate challenges is vital.[69] Other important considerations are that the choice of repertoire should be within the student's technical and interpretative capability; that frequent non-judgmental positive performance opportunities are essential; and that proper musical and psychological preparation are necessary for auditions, examinations, and competitions. The teaching environment should nurture emotional well-being and enable an ability to handle criticism constructively, through "realistic self-appraisal capacity".[70] From a broader perspective, however, because attitudes underpinning the competitive performing arts culture contribute to high injury rates and poor health behaviours, "…long-term and lasting change may require a paradigm shift in the way that we set goals and appraise success within music education".[71]

6. South African research on musicians' health

Advocacy for the development of the field of PAH in South Arica (SA) is emerging, but there is still a general lack of musicians' occupational health awareness.[72] The small amount of research by SA scholars on musicians' health topics reveals similar statistics and health concerns comparable to the extensive literature internationally.

The prevalence of PRHP in SA student or professional musicians is documented in seven studies.[73] Pedagogical investigations included an approach to piano teaching for younger pupils incorporating postural awareness,[74] left hand technique in violin pedagogy from an optimal movement perspective,[75] teaching balanced postural alignment in violin playing,[76] and efficiency in violin bow arm technique.[77] Prevention interventions that were studied include, for example, music students' experiences, perceptions and understandings of a musicians' occupational health course[78] and a warm-up programme for instrumentalists.[79] Research on gastroesophageal reflux in singers,[80] wind instruments' hearing,[81] and music students' health behaviours was also carried out.[82]

Studies exploring varied topics relating to musicians' psychological health include pianists' perceived emotional engagement with the music during performance,[83] the effects of psychological trauma on musicians,[84] the use of music to alleviate MPA,[85] the psychological aspects of the student-teacher relationship in one-on-one music teaching,[86] and emotional intelligence and MPA.[87] Interesting research on the emotional and occupational consequences of injury for musicians found that a large amount of emotional trauma could have been prevented if music teachers had been able to give earlier and more appropriate advice, and if medical specialists had diagnosed and treated correctly.[88] A noteworthy finding in one study was that many SA musicians face severe financial stress and psychological strain due to the need to do additional work to supplement their income.[89]

There is a clear need for further study in the local context, particularly amongst a broader range of musical levels and genres, for the development of the musicians' health field in SA. The inclusion of health promotion programmes in tertiary music education in SA is recommended[90] as well as the development of collaborative, interdisciplinary research networks between music educators and health professionals.[91]

[65] Buchanan & Hays 2014; Britsch 2005; Heming 2004; Brandfonbrener 2001.
[66] Ioannou & Altenmüller 2015; Laursen & Chesky 2014; Pierce 2012; Palac 2008; Rardin 2007; Chesky, Dawson & Manchester 2006; Dawson 2006.
[67] Sternbach 2008.
[68] Pruett 2010; Sternbach 2008; Levine & Levine 1996.
[69] Mennen, Sakai, Ceruso & Winspur 2012.
[70] Kenny & Ackermann 2009:397.
[71] Rickert et al. 2015:12.
[72] Devroop 2014.
[73] Ajidahun, Mudzi, Myezwa & Wood 2017; Thaele 2016; Barnes, Attwood, Blom, Jankielsohn, Janse van Rensburg, Smith, Van Ede & Nel 2011; Hohls 2010; Van der Walt 2006; Michels 2004.
[74] Rhoodie 2004.
[75] Bennell 2004.
[76] Roos 2001.
[77] Foale 2006.
[78] Salonen 2018.
[79] Ajidahun 2011.
[80] Du Plessis 2012.
[81] Schutte 2002.
[82] Panebianco-Warrens, Fletcher & Kreutz 2015.
[83] Foxcroft 2014.
[84] Swart 2014.
[85] Marshall 2008.
[86] Kirsch 2006.
[87] Van Rensburg 2005.
[88] Siebrits 2005.
[89] Hohls 2010.
[90] Salonen 2018; Rennie-Salonen & De Villiers 2016; Thaele 2016; Panebianco-Warrens et al. 2015; Hohls 2010.
[91] Salonen 2018; Rennie-Salonen & De Villiers 2016; Thaele 2016.

7. Conclusion

Musicians are at high risk of occupation-related health issues, which are widespread in diverse genres and at all levels, including tertiary and pre-tertiary student musicians. Most PRHP are preventable because most causal factors are modifiable. Yet most SA musicians have never received information on PRHP occurrence, risk factors and prevention. Researching, developing, and implementing effective health promotion interventions is imperative. Psychological and physiological factors are shown to be linked, indicating that integrated biopsychosocial perspectives are essential for these educational programmes. We must find ways to include health promotion topics in the curricula of tertiary music institutions, so that the skills and knowledge are instilled in the next generation of music teachers.

Behaviours, attitudes, and awareness in educational and professional environments have to change in order to embrace the promotion of musicians' health and well-being more openly as an integral part of music as an occupation. A supportive health culture in the music industry starts with supporting music teachers in aspiring towards the reciprocal goal of ***optimal health equals optimal performance*** for all their students.

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