HEALTH PROBLEMS OF PROFESSIONAL MUSICIANS AND MUSIC STUDENTS

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Abstract
The article focuses on various health problems of professional musicians. Based on the literature, it briefly describes Playing related musculoskeletal disorder (PRMD) and the most common auditory problems, and it outlines the possibilities of preventing them. It stresses the need to conduct a research among Slovak musicians. In addition, it brings preliminary results from a pilot questionnaire distributed to music students at the Academy of Arts in Banská Bystrica. The aim of the article is to highlight the importance of musicians´ health problems, and the need to create a preventive or intervention program for music students.

Keywords: Musician. Playing related musculoskeletal disorder. Hearing disorder. Intervention.

1 Introduction

Preparation for a career of a professional musician requires quantum of hours spent practicing the instrument (which includes repetitive movements), listening to music and performing for the audience. These activities often result in various health problems. Musicians report on different Playing related musculoskeletal disorders (PRMD), hearing disorders and psychological difficulties. Considerable attention has been paid to their physical health, and many researches have shown that these problems occur in professional musicians all around the world. Moreover, they start to show during studies, sometimes even in early childhood. It is necessary to pay attention to this topic also in Slovakia. The musicians´ health should be examined and accordingly, effective prevention/intervention programs for music students, resp. occupational therapy for active professionals should be suggested.

2 Demands on musicians and their health

Nowadays, great pressure and demands are placed on most professions, including musicians – performers. Although, on the stage, the artists often create the impression of stable, determined, confident, somewhat egocentric and passionate people, they face a number of obstacles, and sometimes, their real life is miles away from the one that audience sees in the stage spotlight. Behind their success, dozens of failures, and also disappointments and hours of self-denial could stand. In no way we want to claim that musicians are unhappy and that they internally suffer under the mask of satisfaction, but we want to pay attention to the problems that many of them encounter in their professional careers.

The profession of a musician could be very demanding and exhausting. Being a successful performer requires musical talent, number of hours spent by practicing, excellent interpreting skills, the ability to perform precise movements, excellent perceptual-motor coordination, etc. Furthermore, personality traits such as stress resistance, psychological stability, sociability, low psychoticism, etc. are essential for success. Moreover, there are also requirement regarding actual psychological and mental condition because any performance is influenced by musician´s health, which is at risk for many reasons.

Various aspects of both, physical and psychological health of professional musicians are subjects of much research, especially abroad. Unfortunately, Slovak science in this area lags far behind foreign ones, and there is currently no complex domestic scientific literature describing the health problems of Slovak musicians. However, foreign literature brings a quantum of information in professional journals, conference papers, books, or other online sources. The latest research shows that musicians cope with number of problems.

Primarily, the musicians´ workload is reflected in their physical health. The most common difficulties are musculoskeletal disorders. Their essence depends on the specific musical instrument on which a musician performs. Great deal of research is devoted to orchestra players. In the Australian orchestras, for example, participants from 8 orchestras were examined in the research by Ackerman et al. [1]. Up to 84 % of them reported on pain or former injuries, which resulted in ceasing participation in routine rehearsals or interfered with playing their instruments, and up to 50 % reported pain or injury at the time of the research. Less than 50 % of participants mentioned complete recovery. *"The most common broad sites affected were the trunk (primarily the back), the right upper limb and neck, the left upper limb and neck, and the neck alone, but the relative proportions varied by instrument"* [1, p. 181]. In 2017 *"worldwide studies have shown a high prevalence of PRMD among orchestral musician sometimes exceeding 80 %"* [2, p. 27]. Repetitive hand movement in musicians plays significant role in developing specific movement disorder, focal hand dystonia, which often manifests itself by loss of control in fast passages while playing, and the decrease in the precision of performance. In serious conditions, the fingers start

curling and involuntary flexion and contraction of muscles involved in the play appears (e.g. bowing thumb). Sometimes the spasms are associated with tremor. According to Zeuner & Molloy (2008), *"Musicians are said to be at particular risk for dystonia, especially pianists, guitarists and woodwind players"* [3, p. 1]. Eckart Altenmüller, the vice President of the German Society of Music Physiology and Musicians' Medicine in Hannover found that *"...prolonged practice and pain syndromes caused by overuse can precipitate dystonia, which is developed by approximately 1 % of professional musicians and usually ends their career"* [4, p. 530]. Intense training might be also related to physiological tremors. Findings by Lee at al. [5] *"...corroborate the notion that physiological tremor is related to motor dexterity through intense training (Deutsch et al., 2011) and manifests itself at the peripheral level as an increased tremor amplitude in musicians as compared to non-musicians"* [5, p. 7].

3 Instrument played and specific health related problems

Literature also mentions many other problems related to the artist's work in the field of musical art. Their nature depends on the instrument played. Typical PRMD differ in violinists, accordionists, pianists, saxophonists etc. However, some problems are common to multiple performing groups. As described by P. Drbal [6], musicians often suffer by diseases such as De Quervain's disease (inflammation of two tendons controlling the thumb movements and tendon sheath), ganglions (softer or harder lumps usually on dorsum manus, on the wrist), arthroses (degenerative disease of joint cartilage and bone), tennis elbow (series of micro-cracks, tiny tears or inflammations developed in the elbow tendons), or shoulder impingement syndrome (impingement of shoulder tendons or bursa from bones of the shoulder) [6].

Besides musculoskeletal problems, musicians often experience various auditory disorders. Long-term exposure to excessive sound levels causes hearing disorders such as hearing loss and tinnitus to appear frequently among musicians' health problems. In 2014, Tania Schink et al. found that, among German musicians, there was *"almost fourfold higher adjusted HR* (Hearing loss) *for NIHL* (noise-induced hearing loss) *and a 57 % higher adjusted HR for tinnitus for professional musicians in comparison with the general population"* [7, p. 472]. E. Králová [8] described tinnitus as follows: it *"...is also referred to as rustle in the ear and it frequently occurs in the connection with shortage of hearing"* [8, p. 42]. Further, she mentioned possible treatment in musicians: *"In the vast majority of cases its origin and cause is unknown. Treatment of tinnitus is mostly symptomatic. In these cases, auxiliary treatment is used, which, although it does not remove the cause of the troubles but reduces the symptoms"* [8, p. 44].

Various health problems in musicians appear already in the early stages of their music training. Research by Anna Cygańska et al. [9] showed that in children who played violin, body posture lead to *"some changes in parameters characterizing anteposterior spinal curvatures in the sagittal plane"* [9, p. 176]. It can be assumed that similar changes would be caused by playing other instruments that require unnatural body position and movements. Above mentioned leads to the idea of considering the possibilities of early prevention, resp. intervention for young musicians. The easiest way would be to include preventive and/or intervention activities in the education, i.e. in the musicians´ training. Undeniably, this idea is not new, and is currently being applied in many European countries, such as Norway, Germany, France, Spain, Russia, etc. In Norway, in 1982, the doctor Crispin Spaulding taught the subject of musical physiology, in which she taught anatomy, physiology, ergonomic education, stress processing, etc. In Germany, the Curriculum Musikphysiologie an Musikhochschulen was issued in 2001, with a recommendation for the introduction of a two-semester seminar in musical physiology. In Switzerland, Schweizerische Hochschulzentrum für Musikphysiologie was founded in 2005-06, working with music schools at university level. The 2007 report of the Association Européene des Conservatoires, Academies de Musique et Musikhochschulen suggests the establishment of musical physiology field, etc. [10].

.4 Projects and programs supporting healthy development of musicians

There is number of organizations in the world dedicated to prevention, intervention, and diverse musicians´ support, which are also supporting projects dedicated to the healthy development of musicians. For example, in Germany since 2003, Kapfenburg Castle Foundation, foundation that *"runs a broad range of projects which are addressed to all people who make music, are undergoing an instrumental training or teach music, while they also get in touch with musicians in a medical and psychological way or work at music schools"* [11]. The nearby Czech Společnost pro hudební fyziologii a medicínu hudebníků (Society for Music Physiology and Medicine of Musicians), which is led by the President MUDr. Pavel Drbal, can also be taken as an example. The organization cooperates with music schools at all levels and artistic ensembles, is engaged in educational and preventive activities, coordinates research in the field of music physiology and pathophysiology, provides counselling and information services for patients, all in order to *"serve music that is an important part of our intangible cultural heritage and improve the working conditions of artists"* [12].

The seriousness of health problems and the consequent need to address them are also highlighted by some foreign universities. For example, the Music School at Arizona State University, due to requirements by the National Association of Schools of Music, notifies *"students, faculty and staff of the health and safety issues,*

hazards, and procedures inherent in music practice, performance, teaching, and listening both in general and as applicable to their specific specializations. This includes but is not limited to basic information regarding the maintenance of hearing, vocal, and musculoskeletal health and injury prevention" [13].

A well-thought-out preventive or intervention program must reflect the current situation in the targeted group. Since Slovak musicians get education in local schools and they work in specific conditions, their health problems can be slightly different from the problems of musicians in other countries of the world. Therefore, it would be advisable to examine the Slovak population of musicians as well. Based on the problems identified, on understanding their perception by musicians, and on the analysis of verified effectiveness of existing prevention/intervention activities, it would be possible to establish an appropriate preventive and/or intervention programs for future Slovak professional musicians. The programs could aim at preventing or minimizing the consequences of long-term active interpretation, not exclusively in the physical domain but also in the mental health and well-being. A prerequisite for proposing such a program is the identification of the current situation. This is where the difficulties about diagnostic tools arouse. There is a small number of validated instruments to detect musculoskeletal pain. Psychometrically tested were only few of them, e.g. long and short form of McGill Pain Questionnaire (LF-MPQ, SF-MPQ) by Melzack, and the Brief Pain Inventory (BPI) by Daut et al., Cleeland and Ryan. Especially for musicians, Musculoskeletal Pain Intensity and Interference Questionnaire for Musicians (MPIIQM) was developed and validated by Patrice Berque in 2014. It is designed to measure musculoskeletal pain intensity and pain interference in professional orchestra musicians [14].

5 Pilot survey – research focusing on physical and psychological health of musicians

In order to create a preliminary picture on the situation between musicians and music students in Slovakia, we plan to conduct a research focusing on both physical and psychological problems related to musicians´ work.

In the beginning, we created questionnaire, which we distributed in the school year 2019/20 to performing arts students at the Academy of Arts in Banská Bystrica (Slovakia). In our pilot survey, we used a questionnaire designed in cooperation with experts in the field of physical education and physical health – Mgr. Juraj Kremnický, PhD. and Mgr. Soňa Kremnická, PhD., who has multi-year experience with young musicians (currently, she teaches the subject Physiology and hygiene of the voice/playing apparatus at the Conservatory). We divided the self-reported questionnaire into two parts. In the first one, we focused on any pain, tension and stiffness of muscles while playing (now and in the past), and in the second part, we surveyed consequences of these difficulties, such as quitting playing or taking various measures (e.g. visiting a doctor, studying literature, etc.). 15% of our respondents reported they did not feel pain in any parts of their bodies at the time of the survey, nor did they before. 85% responded that they felt the pain while playing either often or almost always. As much as 52% of students sought a doctor help. Subsequently, of these, one respondent underwent surgical treatment, 41,2% took medication treatment, 76,5% underwent the rehabilitation. Of all students, many also reported "self-treatment" or taking other measures, such as doing exercise (6% strengthening, 12,1% yoga or stretching, 12,1% relaxation, 15% swimming), taking self-medication by applying ointments (9,1%), taking nutritional supplements (3%), having massages (6,1%). Further investigation is needed to confirm psychometric characteristics of the questionnaire.

We consider the results or the survey to be alarming. If about half of musicians experience pain while playing to such an extent that they seek medical help during studies, i.e. before starting a full professional career, it is necessary to consider including an intervention/prevention programs in their training.

In the future, we would suggest addressing this issue in more detail, extending the research to examine auditory dispositions (there is an empire-based concern that students might also suffer from hearing problems such as tinnitus), the psychological problems, resilience of students and their well-being. Based on the results obtained, we would propose to create both intervention and prevention programs. The seriousness of the topic is intensified by the fact that health discussions with professional musicians *"revealed a complex link between health and performance, including the dramatic impact of potential or actual health problems on musical careers"* [15, p. 129]. *"Only those who feel comfortable in their body can also play or sing expressively. For this, music students already need a basic knowledge about stress management techniques, balance through movement and a physiological posture at the instrument"* [16]. Further, scientists recommend *"that a music health curriculum, including body awareness programs such as Alexander technique, regular hearing tests, advice on hearing protection, noise level monitoring, performance anxiety counseling, as well as training in injury prevention and management, be implemented and made available to students"* [17, p. 158]. All of these can be addressed in the intervention and prevention programs throughout the music studies.

6 Conclusion

A quantum of world research documents various health problems in musicians. There is a lot of evidence that repetitive movements while playing instrument often result in PRMD. Furthermore, the scientific literature provides evidence of hearing disorders in musicians related to their work and excessive exposure to high noise levels, and of psychological issues linked to the specific character and demands of musicians´ professional activities.

Similar comprehensive studies in recent decades have been completely absent in Slovakia. Therefore, we find it important to address this problem and to create a team of scientists who would be able to evaluate not only musculoskeletal disorders, but also hearing disorders and psychological problems. We assume that the difficulties start emerging before students start their active career of a performer. Therefore, an effective and sophisticated intervention and prevention program should be provided to music students. Ideally, preventive activities could be included in the curriculum in the form of physical exercise, educating students about various ways to prevent the health problems, psychological counselling etc. We could take the example of many European countries where similar programs have already been put into practice.

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