

Swiss University Centre for Music Physiology

Contact: www.shzm.ch

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The SNF research project “Prolonged Performance-Related Psychophysiological Activation in High- and Low-anxious Music Students“ in cooperation with the Lausanne University and the SHZM was completed in the academic year 2016/17. First publications have recently appeared (see abstract at: <http://journals.sagepub.com/doi/pdf/10.1177/0305735617706539>).

The study focusses on the connection between stage fright, cognition and self-judgement from an artistic point of view during the days in proximity of a solo performance. Further psychometric data and results on stress hormone levels in the saliva as well as on the subjective and objective quality of sleep will be published shortly.

The research project begun in October 2014 in cooperation with the Zürcher Zentrum Musikerhand (www.zzm.ch) at the ZHdK under the title “Objective Criteria for the Individual Selection of a Physiologically Advantageous Violin Position” has reached its final phase and is about to be completed.

Differences in muscle tension and perceived effort in interdependency of prototypical violin positions observed in 2 preliminary studies have been confirmed in a laboratory-based setting. By doing so, both conventional playing positions as well such linked to historically informed performance practices were considered.

For the first time, this application-oriented research project aims to provide a quantitative analysis of individually limiting or enabling biomechanical and muscular factors of the left upper extremity linked to the most typical instrument positions in violinists. On this basis, physiological guidelines and checklists for decision-making in a teaching surrounding in view of ergonomic optimisations as well as the prevention of task-specific health problems linked to playing have been derived. First results in the yielding information on the connection between physical pre-dispositions resp. biomechanics and individual, physiologically advantageous violin positions are available in the meantime. The data baseline permits to derive ergonomic solutions considering individual biomechanical characteristics.

Simplified and easy-to-handle movement tests possible to apply in a teaching surrounding and independent of a laboratory setting have been developed in the course of the study and have been presented in workshops. These include the observation of the most frequent compensation movements as a possible source for technical limitations and task-specific health problems.

A new research project, “Hidden Characteristics of the Hand and Arm in Percussionists” is currently examining the most relevant characteristics in the upper extremities of percussionists in view of their relevance for performing and teaching. For this body of research, the device for measuring passive mobility of the wrist,

which has been newly integrated into the hand laboratory's pool of devices, plays an essential role. The aim of this long-term project, is to build up of an instrument-specific comparison group for percussionists in analogy to the comparison groups built up by Christoph Wagner over 50 years of research for piano, violin, cello etc. These comparison groups still are being used by our laboratory and include numerous anonymised data of prominent musicians of several countries as well as complete section of the world's leading orchestras.

These instrument-specific comparison groups permit the comparison individual hand characteristics with those of other professional musicians. Valuable insight can thereby be gained in view of optimised playing positions, practicing techniques, endurance training, therapy options, etc.

The further education offers in music physiology, now available for over 10 years, continue to be offered for music universities wishing to host such events in collaboration with the SHZM. When booking these events, the respective music university is responsible for hosting and budgeting issues. The SHZM has the possibility of granting contributions to the lecturers' fees. Invitations to the event can be sent out via the SHZM throughout Switzerland. In addition to their own musicophysiological courses on offer, the respective music universities also have the option of booking one of 16 events, held in multiple languages, by the following lecturers: Victor Candia, Johanna Gutzwiller, Horst Hildebrandt, Oliver Margulies, Christoph Mohler, Marta Nemcova, Marina Sommacal and Irene Spirgi. An extension of the SHZM's offers is currently under way for voice and historical keyboard instruments. The course's precise content can be tailored to the needs of the music university hosting the event. So far, the duration of the events have ranged from a half-day event to a maximum of two days. Information can be found on the SHZM website.

The continuing education study program in Music Physiology, supported by the SHZM and structured by lecturers of several Swiss music universities has accepted a new group of 8 students for the syllabus. More information on the syllabus aiming for the degrees CAS, DAS and MAS (Master of Advanced Studies) can be found on the website of the SHZM.

The graduates of this continuing education study in music physiology (from the DAS-level) have by now taught over 260 further education courses for other music institutions. Starting from the autumn semester 2011 / 2012, a team of these graduates have been teaching a basic training in music physiology at the Swiss Academy for Music and Music Pedagogy (Kalaidos Music College) in Aarau within the framework of the Academy's bachelor degree syllabus. This syllabus will be significantly expanded in the next academic year. From 2013, these graduates also have given further education courses for the Zurich Music School and Conservatory and have built up a school-intern musicophysiological consultation offer.

In the academic year of 2016/17, the Musikschule Zürcher Oberland as well as the Music School and Conservatory of Zurich have received the Certificate of Health Promotion at Music Schools after completing the necessary requirements. These

certificates will be presented to the respective schools in a ceremony in autumn 2017.

By definition, a music school holding such a certificate promotes the prevention of task-specific health problems and supports health promotion for their teachers as well as their students by regularly offering further educations with musicophysiological topics. Prior to such a certificate, the music school will have had to offer the following further educations:

- 1) Introductory lecture
- 2) Workshop treating basic themes of music physiology
- 3) Instrument-specific advanced training course(s)
- 4) Introductory course covering the themes of performance/stage training, specific competencies for appearance on stage and constructive dealing with stage fright.

Furthermore, a certified music school offers their employees free-of-cost individual musicophysiological counselling sessions with specialists of the Music Physiology and Preventive Medicine Section as well as persons in training of the continuing education study program in Music Physiology of the Zurich University of the Arts. Music schools interested in this certificate can retrieve further information from the website of the Musicophysiological Counselling Centre of the Zurich University of the Arts: <https://www.zhdk.ch/?beratungszentrum.musikphysiologie>

The project designed eight years ago to build up fitness and good physical condition amongst students of Swiss music universities continues on a regular basis. In coordination with the universities' sport offers, the introduction to this program is given by Christoph Mohler, directly in the respective music universities. In addition, there exists the possibility of booking a fitness check-up free of cost with suggestions for exercises and a progress control of development after several months. Music universities, who are currently not participating in this scheme, are invited to contact Horst Hildebrandt anytime (please refer to the SHZM's homepage for further information).

The SHZM's flyer can be downloaded and printed out in German, French and English from the homepage under the link "Downloads".

Important projects involving the SHZM were presented during the last season at continuing education courses and conventions in Bad Neustadt, Bad Wildbad, Basel, Freising, Berlin, Düsseldorf, Graz, Lausanne, München and Zürich. Written publications have appeared in the journals Musikphysiologie & Musikermedizin und Psychology of Music.

Horst Hildebrandt, Johanna Gutzwiller and Irene Spirgi for the SHZM coordination team, August 2017.