

Guest Editorial

Multidisciplinary Applications of Vibroacoustics – from Clinical Practice and Research to Future Directions

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Within the pages of this special issue, are articles that represent over 30 years of clinical practice, research, discussion, and development in the field of vibroacoustic therapy. It comprises submissions based on pioneering work that began in the 1980s and has been continued and further conceptualized as part of music therapy practice, music medicine applications, along with various other therapeutic applications within the fields of healthcare, rehabilitation, and wellbeing. We are proud of the collection represented here as it reflects how much that has been achieved over the years and furthermore provides a clear indication of that which may follow. This special issue marks an encouraging and inspiring step towards the application of low frequency sound vibration as a treatment and therapy application option in a plethora of contexts.

Vibroacoustic therapy (VAT) is traditionally considered to be a physical and receptive form of music therapy that incorporates pulsed, sinusoidal, low frequency sound from a specially designed device. Sinusoidal sound is the simplest sound information representing only a single frequency with no harmonics. Low frequency sound vibrates between 20 and 100 Hz (20-100 times per second). [1, 2]

The various forms of vibroacoustic applications can be defined in 3 ways: according to the special needs of a clinical target group, by the elements included, and according to the competencies and formal training of the practitioner. In sum, these applications are referred to either as vibroacoustic therapy or vibroacoustic treatment. Vibroacoustic therapy uses the combination of low frequency sinusoidal sound vibration, music listening, and therapeutic interaction. It is conducted by a trained therapist (e.g. music therapist, psychotherapist, physiotherapist, occupational therapist), who

also has appropriate training (e.g. VIBRAC-practitioner training) in using the parameters of vibroacoustic stimuli for the purpose of achieving individually set therapeutic goals. Vibroacoustic therapy is always process-oriented and it has been used through the years with various client groups. Vibroacoustic stimuli can be provided through various kinds of technical devices. Such devices have been developed for example in Norway, Finland, and the USA.

In comparison to vibroacoustic therapy, vibroacoustic treatment is conducted by a trained clinician (e.g. VIBRAC-practitioner) in either a hospital or other institutional context, or in private practice. It is also goal-oriented work, meaning that it starts through conducting an appropriate initial assessment, creating an individual treatment plan, carrying out the treatment protocol, evaluating the outcomes of the treatment, and finally, through writing the clinical report.

There are a variety of terms related to vibroacoustic stimuli. Such terms that can be found in literature and/or research articles include, for example, vibroacoustic stimulation, vibrotactile stimulation, low frequency sound stimulation, low frequency sinusoidal sound stimulation, and rhythmic sensory stimulation. Despite the different terms used, the core element of vibroacoustic stimuli is the low frequency, sinusoidal sound vibration, which can basically be used for either relaxation or activation. The main parameters that control the stimuli are the used frequency of sound (Hz), amplitude, pulsation, and scanning. When combined, these adjustable sound parameters provide diverse possibilities in designing and editing vibroacoustic stimuli to meet individual therapeutic needs.

This Special Issue on the Multidisciplinary Applications of Vibroacoustics is based on some of the authors' contributions at the first international VIBRAC-conference held October 14th-15th 2016 in Lahti, Finland. The event gathered presenters and participants from 16 countries that attended from all over the world. Keynote addresses were given by Dr. Heidi Ahonen, Dr. Ana Katušić, Dr. Lee Bartel, and Dr. Esa Ala-Ruona, some of whom have contributed to this special issue, as well. The conclusion made in the conference was that there is an evident need for collecting all the available information on the best practices both in clinical

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work and in research, and to aim towards reaching consensus on more formalized procedures that will lead toward standardization. These also are the main goals and objectives of the VIBRAC Skille-Lehikoinen Centre for Vibroacoustic Therapy and Research, and furthermore, our hope is that this issue will formulate as an international hub for all of this information-so that it can be a focal point in sharing it. The impression from the conference was that it is the time to take a step further in development and we have a very nice growing body of knowledge to be shared. A concrete example of this is the composition of the articles within this special issue.

This special edition of Music and Medicine starts with a commentary from Olav Skille. He is the pioneer of vibroacoustic therapy with over 40 years of clinical experience in the field. This is followed by Lee Bartel, Robert Chen, Claude Alain, and Bernhard Ross' discussion about *A Foundation for Sound as Brain Stimulant with Application to Possible Treatments*. Following this are two contributions related to Alzheimer's disease, which is a very interesting target group for which vibroacoustic treatment shows great potential. First, is a clinical report on *The Potential of Rhythmic Sensory Stimulation Treatments for Persons with Alzheimer's Disease* by Amy Clements-Cortes, Lee Bartel, Heidi Ahonen, and Morris Freedman. The second is a case study by Amy Clements-Cortes, Lee Bartel, Heidi Ahonen, Morris Freedman, Michael Evans, and David Tang-Wai entitled *Can Rhythmic Sensory Stimulation Decrease Cognitive Decline in Alzheimer's Disease?: A Clinical Case Study*. Next, a unique paper by Russ Palmer, Olav Skille, Riitta Lahtinen, and Stina Ojala discussing and presenting *Feeling Vibrations from a Hearing and Dual-Sensory Impaired Perspective*.

Vibroacoustic Treatment Protocol at Seinäjoki Central Hospital is presented by Jouko Hynynen, Virpi Aralinna, Marie Rätty, and Esa Ala-Ruona. Furthermore, from the same clinical context, the paper by Elsa Campbell, Jouko Hynynen, and Esa Ala-Ruona presents clinical experiences and outcomes in *Vibroacoustic Treatment for Chronic Pain and Mood Disorders in a Specialised Healthcare Setting*. Marko Punkanen, Marjo Nyberg, and Tiinapriitta Savela illustrate the use of vibroacoustic therapy in a music therapy context presented as a clinical report entitled *Vibroacoustic Therapy in*

the Treatment of Developmental Trauma: Developing Safety through Vibrations. Finally, we conclude with a research article by Eha Rüütel, Ivar Vinkel, and Priit Eelmäe about *The Effect of Short-term Vibroacoustic Treatment on Spasticity and Perceived Health Condition of Patients with Spinal Cord and Brain Injuries*.

Vibroacoustic therapy already has a long history in clinical practice, and there is lot of anecdotal practice-based evidence available. Recent years have also shown that research activities are increasing, and new approaches in investigating this multifaceted treatment and therapy are emerging. Systematic clinical work, high quality research, and continuous development of formal training are the cornerstones of favorable future development. All carefully conducted reporting is crucial, and the VIBRAC Centre will provide more formal guidelines for both clinicians and researchers for enabling reliable and succinct communication within the field and with closely related professions. [3]

See the VIBRAC website for more details on training, research, and upcoming events (www.vibrac.fi), and "like" our Facebook page "Vibrac Skille-Lehikoinen Centre for Vibroacoustic Therapy and Research" to find out more about our activities".

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