The Effects of Vibroacoustic Music on Symptom Reduction Inducing the Relaxation Response through Good Vibrations Dr. George Patrick
http://vibroacoustic.org/FrequencyInfo/Research%20Articles/Effects_of_Vibroacoustic_Music_on_Symptom_Reduction.pdf
IEEE Eng Med Biol. March/April 1999:97–100.

Ongoing since 1995, the National Institutes of Health has the most extensive program in the U.S. for vibroacoustic pain and symptom reduction, treating over 50,000 patients per year. In one study, Dr. George Patrick measured the physiological and behavioural effectiveness of these interventions with 272 patients and found over 50% reduction of pain and symptoms.

"Good, good, good, good vibrations" proclaimed the Beach Boys in both words and vibrant harmony. As with most of their music, the simple lyrics are outweighed by harmonic message. Still, their teenaged composer and lyricist, Brian Wilson, was inspired by why dogs barked at specific people and why certain girls emanated exciting vibrations ("excitations"). Music and vibration would appear to be far from the concerns of human adaptation, but surprise has always been a driver of scientific investigation.
The need for hospitalized patients to experience the relaxation response as an antidote to the stress of treatment and adjustment to the possibility of chronic or life-threatening conditions is clear. The systematic application of music to promote positive changes in behavior has been used successfully in a variety of hospital settings. The effectiveness of music interventions in stress management has been measured physiologically and behaviorally.

This present study extends previous research by describing the outcome of a recreation therapy program of Vibroacoustic music (VAM) offered to hospitalized patients. Results indicate over 50% reduction of pain and symptoms through the use of VAM. In order to provide patients with assistance in achieving the relaxation response, recreation therapists at a major federal research hospital created several relaxation opportunities for patients and family members. Included in these opportunities were classes in:
• Relaxation techniques (instruction in progressive relaxation, guided imagery, autogenic training, rhythmic breathing, light exercise and mindfulness meditation);
• Tai chi;
• Group meditation
• Other focus activities (i.e. exercise, arts, and crafts)

In addition, the recreation therapists created a relaxation room, equipped with four Somatrons, which is commercially available Vibroacoustic Music Recliner delivering ear-level stereo sound and tactile vibrations that allow the body to feel the music that is normally only heard. Patients can access an initial session in the relaxation room using anxiolytically designed (relaxing) music titled "Balance." Subsequent uses of the relaxation room have employed either "Balance" or music from "The Musical Body" (Therasound). In all cases, the relaxation room is a recreation therapist-guided session with a 10-minute introduction, 25 minutes of music/vibration, and about 10 minutes of debriefing (a total of 45 minutes per session).

The researcher and colleagues were surprised at patients reporting that they received unintended (and unadvertised) symptomatic relief as a result of VAM. These unsolicited testimonials led the program evaluation to include a measure of patient

symptoms in both pre and post VAM sessions.

Method (Sampling Procedure)
A program evaluation yielded data from the use of these VAM recliners with anxiolytic music gathered from 272 adult patients in a major research hospital. This was a convenience sample of those who came to the relaxation room. Patients were recruited by several methods; physician referral, patient response to recreation therapist recommendation, or patient response to information about the relaxation room (printed materials and word of mouth from other patients). These patients had varying diagnoses; cancer (97); heart, lung, and blood disorders (55); infectious disease (54); mood disorders (32); and miscellaneous conditions (34). Their ages ranged from 21 to 67, with an average age of 43.7 years. Females made up 53% of the sample. Again, this study reports a program evaluation. As such, no effort was made to develop a meaningful control group.

Measurements and Variables
Data were gathered from two patient self-report instruments, completed immediately before and after the VAM session. State of relaxation was measured by selecting one of seven statements from the "Self-Report Rating Scale for Tension and Relaxation" asking "Which of the following best describes the way you feel right now?"

1. Feeling more deeply and completely relaxed than I ever have.
2. Feeling completely relaxed throughout my entire body.
3. Feeling more relaxed than usual.
4. Feeling generally tense throughout my body.
5. Feeling relaxed as in my normal resting state.

All 272 patients completed this Self-Report Rating Scale for Tension and Relaxation. It was used as a comparative value for the symptom intensity, visual analog scale.

Because this study attempted to track whatever symptoms patients were experiencing at the moment before the VAM session, the open-ended questions asked of them were: "What symptom(s) are you experiencing now?" and "At what level of intensity?". Up to three symptoms were requested from our patients, and they were asked to place a hash mark on a visual analog scale (VAS) to rate the intensity of each particular symptom. The line was anchored at its ends by the printed phases "not at all" and "very much." Some chose no symptoms.

The pre-post data set afforded a between-groups analysis among the dependent variables. To analyze the results, we employed a paired t-test to determine the probability of the changes in pre versus post differences.

Results (Descriptive Findings)
To measure the state of relaxation, the seven point Self-Report Rating Scale for Tension and Relaxation was used. With N=272, the pre rating was 5.12 (5 is "Feeling Some Tension in Some Parts of My Body") while the post rating was 2.77 (3 is "Feeling More Relaxed Than Usual"), a statistically significant difference. Although this scale is ordinal, anchored with descriptive language (categorically ordered), the Bartlett's test of fit allowed for an estimation of effective improvement of 33.4% in state of relaxation.

Aggregation of the symptom data showed an average participant pre (VAS) rating of 67.20 (of 100) and a post rating of 31.55, a 53% reduction in cumulated symptoms.

Only the first (of up to three) symptoms was analyzed in this program evaluation to simplify the data displayed here. The most frequently identified symptoms were tension-anxiety, pain fatigue, nausea, headache, and depression, which comprised 92% of the symptoms mentioned. The post rating was done at the end of the VAM session in order to determine the perceived effect in order to determine the perceived effect of the session on the symptom and to reduce the influence of other variables. Each of these symptoms showed reduction in intensity based on pre-post mean scores. The intensity of symptoms was reduced from pre to post by the following percentages; nausea 61%; headache, 58%; tension-anxiety, 54%; pain, 53%; depressed mood, 49% and fatigue, 47%. A one-sample t-test (pre-post) was performed and all the results were statistically significant at $P<.0001$.

Discussion

Data were not analyzed by diagnostic group for purposes of this study. An inspection of the patient-reported symptoms showed that such symptoms frequently were not associated with the disease, only occasionally associated with the treatment (i.e. nausea from chemotherapy), and were clustered under what could be called psychosocial stress (a result of disease, hospitalization, and experimental treatment) secondary to primary diagnosis. Since both the room and program name were titled "relaxation," the author felt that changes in self-reported symptom intensity would be far from "leading" (not telling us what they thought we wanted to hear). Still, patients seemed to find a way to give us answers we wanted to receive. That kind of willingness, plus the nonrandom selection and lack of control group, should give rise to suspicion as to our results.

This program evaluation data yielded descriptive information showing symptom reduction over the period of a single 45-minute VAM session. Having conceived this program evaluation as an initial exploration, the researcher offered no initial hypotheses. The robustness of these salutary results, however, affords the opportunity to at least speculate on what might be going on during VAM.

The power of the relaxation response may yet to be fully documented. Hypnotic trance states have been used to help patients successfully through difficult medical procedures, such as surgery, with considerable less post-surgical complications and reduced recovery time. The whole area of mind-body medicine struggles with hypothesis development that requires an expanded view of reciprocal causation in the sympathetic and parasympathetic systems.

Another speculation offered is the role of the placebo effect and positive expectations. Our focus on the relaxation response (name of the room, program name, and asking for relaxation ratings) was helpful in minimizing any expectation for symptom reduction. Still many patients are given to please their caretakers and we might well have measured a response bias. The placebo effect has been measured as strong as 30 - 60%. It is clearly a real effect and ought to be optimized rather than ruled out. Even double-blind, random selection studies are unable to factor out the placebo effect; therefore, we acknowledge and embrace this limitation.

The focus of this study touches on the role of music/vibration in human adaptation. In some way, music/vibration of certain frequencies, intensities, rhythms, etc., might be implicated in the body's regulatory mechanisms. In general, most hospitalized patients could benefit from some form of down-regulation of "sympathetic tone" (an interesting phrase in this discussion). The researcher entertains the notion that multiple mechanisms of the body may use music/vibration to regain a healthy

homeostasis. Indeed, Chesky has suggested that pacinian corpuscles, excited by vibrations of certain frequencies, may mediate pain and other noxious stimuli.

Disease can be seen as the inability of the human organism to cope with or handle disturbances insulting to its homeostatic systems. The science of medicine is being reshaped by the role of molecular messengers that communicate to regulatory mechanisms in ways that are well beyond our understanding of the "hard-wired" nervous system. The blood-brain barrier has become about as relevant as the Berlin wall. If the super-high-frequency vibrations of light affect our mood states and biological time clocks, how far afield is it to suspect that music and vibration (at much lower frequencies) have effects on psycho-neurophysiology?

In the future, when this program evaluation develops into a more carefully conceived research study, with attention to patient selection and assignment, an attempt at a control condition, and a range of calibrated dosage levels, our research team will be in a better position to make stronger claims generalizability. Nonetheless, sufficient data were generated to indicate that many patients using VAM experienced a deep relaxation response and reduced their symptom burden. Clinical impressions by the group of five recreation therapists were commensurate with the statistical significance reported. Having some personal control of their symptom burden pleased most patients. This positive outcome was used to point out that patients could clearly benefit by regular practice of an effective relaxation technique. Patients were given additional training in the "Art of Relaxation; class, through individual instruction, or by readings.

Conclusions

The present results suggest the value of using VAM to induce the relaxation response in order to reduce the symptom burden of hospitalized patients. These findings point to an avenue of future research using careful selection assignment, controls, variable dosage, and longer follow-up periods to test the durability of VAM interventions. Perhaps Brian Wilson was more right than he knew when he recommended that we would do well to "Keep good vibrations a happenin' to me."

Acknowledgment

The author wishes to acknowledge assistance in data collection and clinical expertise of the following recreation therapists who, with him, run the relaxation room: Sharon Ballard, Jane Ganz, Cindy White, Linda Scimeca, and Jim Ebel. Mark Mattiko helped with data analysis. George Patrick serves as chief of recreation therapy in the Rehabilitation Medicine Department, Clinical Center, of the National Institutes of Health. He earned his Ph.D. at the University of Illinois. His professional career as a recreation therapist spans five states and a wide variety of clients. Dr. Patrick plays golf, rides a sport motorcycle, serves food to the homeless in Washington, DC, and is enjoying grand fatherhood. With his wife, Jane, he enjoys music of the National Symphony and sings in a church choir.

Symptom Change from a Single VAM Session

Symptom (N)	Pre	SD	Post	SD	% Diff.	P
Tension (74)	67.85	19.90	31.18	19.88	54.00	<.0001
Fatigue (60)	72.16	17.48	37.98	22.61	47.36	<.0001

Pain (46)	64.96	20.32	30.33	18.05	63.33	<.0001
Headache (24)	60.46	20.77	25.67	19.90	57.64	<.0001
Depression (18)	71.00	19.77	35.89	19.25	49.45	<.0001
Nausea (16)	67.25	20.66	26.25	50.47	60.97	<.0001
Other (29)	61.97	19.44	27.10	22.49	56.27	<.0001
Combined (267)	67.19	19.67	31.54	20.70	53.04	<.0001

Music and Vibration Therapy as Clinical Intervention for Physiologic Functional Adaptation

Berger, Dorita S. and Schneck, Daniel J. Journal of Scientific Exploration, Vol. 17, No. 4, pp. 687-703, 2003
http://www.academia.edu/4340349/The_Use_of_Music_Therapy_as_a_Clinical_Intervention_for_Physiologic_Functional_Adaptation

To summarize, we suggest that music has the ability to alter fear and stress responses by re-setting homeostatic set-points precisely because music elements synergize with physiologic function and can therefore alter homeostatic set-points to derive positive results. As a medical intervention, music therapy impacts upon stress and fear responses in a manner resulting in stress and pain management, language and cognition, memory, attention, functional motorplanning (praxis), auditory tracking, figure-ground awareness, depth perception, sound location, auditory/visual integration, auditory and motor coordination, proprioception, vestibular and tactile stimulation, and many other areas of human function.

Vibroacoustic Sound Therapy Improves Pain Management and More

Chris Boyd-Brewer, MA, FAMI Ruth McCaffrey, ARNP, ND

http://www.vibroacoustictherapy.com/documents/Vibroacoustic-Sound-Therapy-Improves-Pain-Management.pdf

Might have to copy and paste this link

Compelling evidence has been provided by a variety of studies that vibroacoustic music is a viable pain and symptom management tool. Benefits from vibroacoustic therapy are clearly suggested, although there appear to be many variables in the type of equipment employed, frequencies and/or music used, and session methodology. In the healthcare setting continued research is necessary to adequately determine parameters of optimal vibroacoustic use.

As the authors point out: no single explanation can prove positive effects from the use of vibroacoustic music in health practices. When considering how and why vibroacoustic therapy works, it is important to recognize that effectiveness may come from both physical and mental stimulation. It may be that the synergy of the two, the mind-body connection, makes this methodology successful in relaxation and pain reduction.

The article summarizes three possible explanations for the positive effects of vibroacoustic therapy: 1. Vibroacoustic music sessions trigger the relaxation response with benefits for pain and symptom reduction as well as tension, fatigue, headache, nausea, and depression. 2. Stimulation of the Pacinian corpuscle at frequencies between 60 Hz and 600 Hz creates neuronal inhibition of pain. 3. Vibration may assist in cellular cleansing mechanisms with possible positive effects on health and illness.

Research has indicated that positive effects for pain relief using vibration technology are more effective over large areas of the body, and pain relief is more significant when applied in close proximity to where the pain is experienced.

Vibroacoustic Treatments for Parkinson's Patients Lessens or Eradicates Symptoms

Abstract

Objectives

The objectives of this study were to gather preliminary data on psychological and physiologic effects of a 20 minute vibroacoustic treatment. The treatment included 4 components of interest:

1. The Music – Heart opening and powerful
2. Binaural Beats – the music includes both theta and delta frequencies tuned to the music.
3. Sound Chair - The subjects were on a powerful sound chair with 4 bass transducers vibrating the body.
4. Rotating Chair - The sound chair rotates (so the subjects go a bit on their side, then on their back, then upright), activating the vestibular system in the subjects.

Subjects:

12 adults with varying degrees of symptoms and medication participated in the study.

Intervention:

Participants listened to a CD with theta delta (0-4 Hz) binaural beat frequencies for 20 minutes on the rotating sound chair.

Results:

Subjects filled out a form with information on their symptoms on a scale of 1-10 (10 being the most severe). Upon completion the subjects again rated their symptoms. The symptoms were reduced on average from 8 to 2. 50% of the subjects had their symptoms reduced to 0. One subject had their symptoms from 8 – 6. Subjects were contacted the following day. 30% of the subjects still had some level of symptom reduction. Three subjects reported that they slept well for the first time in over a year.

Conclusions:

The particular music, binaural beats, and rotating sound chair are extremely effective in reducing symptoms. More research is needed to pin point which of the four parameters is the most effective, or if the effect is as a result of the combination of parameters.

Vibroacoustic Sound Therapy effective for Symptom Reduction

Patrick, George, Recreation Therapy-Rehabilitation, Medicine Department, Clinical Center NIH

http://www.vibrationtherapy.org/wp-content/uploads/2013/10/Effects-of-VibroAcoustic-Music-on-Symptom-Reduction.pdf

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A study done on the effect of using vibroacoustic music as a treatment for symptom reduction in patients suffering from a variety of diagnoses including cancer, heart, lung and blood disorders, infectious disease, and mood disorders. Their most frequently identified symptoms were tension-anxiety, pain, fatigue, nausea, headache and depression. As a result of the vibroacoustic session, the reported intensity of symptoms was reduced from pre to post by the following percentages: nausea, 61%; headache, 58%; tension-anxiety, 54%; pain, 53%; depressed mood, 49%; and fatigue, 47%.

Effects of Vibroacoustic Music on Challenging Behaviors in Individuals with Autism and Developmental Disabilities

http://www.musicmedicinecollaboration.com/topic/effects-of-vibroacoustic-music-on-challenging-behaviors/

http://www.sciencedirect.com/science/article/pii/S1750946708000895

Abstract:

Vibroacoustic music has been proposed to be an effective treatment for individuals with developmental disorders and challenging behaviors. The present study experimentally tested the effects of vibroacoustic music on self-injurious, stereotypical, and aggressive destructive behaviors in 20 individuals with autism spectrum disorders and developmental disabilities. The participants were randomized into two groups in a randomized controlled trial evaluation. The first group received 10 - 20 min sessions with vibroacoustic music treatment for 5 weeks. Then the second group received the same treatment during the next 5 weeks. Behavior was assessed using the Behavior Problems Inventory in all participants before the treatment, after the first group had completed their treatment, and again after the second group had completed their treatment. In order to evaluate each session, the accompanying assistants assessed behavior on different scales after each session. In addition, the sessions were videotaped and analyzed minute by minute for challenging behaviors. The results revealed that vibroacoustic music reduced self-injurious, stereotypic, and aggressive destructive behaviors in the participants. In addition, the results indicated that the effect of vibroacoustic music was to some extent dependent on the participants' diagnosis. Implications for vibroacoustic music theory and practice are discussed.

Effects of a Low-frequency Sound Wave Therapy Programme on Functional Capacityhttp://www.musicmedicinecollaboration.com/topic/effects-of-a-low-frequency-sound-wave-therapy-programme-on-functional-capacity-2/

Objective
To evaluate the effects of a low-frequency sound wave therapy programme on functional capacity, blood circulation and bone metabolism of the frail elderly.

Conclusions
Low-frequency sound wave therapy may have the potential to promote well-being of frail elderly subjects via improved functional capacity, especially in subjects who are too frail to undertake exercise.

Jean-Martin Charcot and His Vibratory Chair for Parkinson's Disease
http://www.cinahl.com/cgi-bin/refsvc?jid=1744&accno=2010367955

Vibration therapy is currently used in diverse medical specialties ranging from orthopedics to urology to sports medicine. The celebrated 19th-century neurologist, J.-M. Charcot, used vibratory therapy to treat Parkinson disease (PD). This study analyzed printed writings by Charcot and other writers on vibratory therapy and accessed unpublished notes from the SalpÃªtriÃ¨re Hospital, Paris. Charcot lectured on several occasions on vibratory therapy and its neurologic applications. He developed a vibration chair for patients with PD after he observed that patients were more comfortable and slept better after a train or carriage ride. He replicated this experience by having patients undergo daily 30-minute sessions in the automated vibratory chair (fauteuil trÃ©pidant). His junior colleague, Gilles de la Tourette, extended these observations and developed a helmet that vibrated the head on the premise that the brain responded directly to the pulsations. Although after Charcot's death vibratory therapy was not widely pursued, vibratory appliances are reemerging in 21st century medicine and can be retested using adaptations of Charcot's neurologic protocols.

Goetz, C. G. (2009). Jean-Martin Charcot and his vibratory chair for Parkinson disease. Neurology, 73(6), 475-478.

Vibroacoustic Therapy for Parkinson's, Fibromyalgia, Alzheimer's and Depression

by Novotney, Amy. APA, Monitor on Psychology November 13, Vol 44, No. 10
http://www.apa.org/monitor/2013/11/music.aspx
(American Psychological Association)

At its core, music is sound, and sound is rooted in vibration. Led by Lee Bartel, PhD, a music professor at the University of Toronto, several researchers are exploring whether sound vibrations absorbed through the body can help ease the symptoms of Parkinson's disease, fibromyalgia and depression. Known as vibroacoustic therapy, the intervention involves using low frequency sound — similar to a low rumble — to produce vibrations that are applied directly to the body. During vibroacoustic therapy, the patient lies on a mat or bed or sits in a chair embedded with speakers that transmit vibrations at specific computer-generated frequencies that can be heard and felt, says Bartel. He likens the process to sitting on a subwoofer.

In 2009, researchers led by Lauren K. King of the Sun Life Financial Movement Disorders Research and Rehabilitation Centre at Wilfrid Laurier University, in Waterloo, Ontario, found that short-term use of vibroacoustic therapy with Parkinson's disease patients led to improvements in symptoms, including less rigidity and better walking speed with bigger steps and reduced tremors (NeuroRehabilitation, December, 2009). In that study, the scientists exposed 40 Parkinson's disease patients to low-frequency 30-hertz vibration for one minute, followed by a one-minute break. They then alternated the two for a total of 10 minutes. The researchers are now planning a long-term study of the use of vibroacoustic therapy with Parkinson's patients, as part of a new partnership with the University of Toronto's Music and Health Research Collaboratory, which brings together scientists from around the world who are studying music's effect on health.

The group is also examining something called thalmocortical dysrhythmia — a disorientation of rhythmic brain activity involving the thalamus and the outer cortex that appears to play a role in several medical conditions including Parkinson's, fibromyalgia and possibly even Alzheimer's disease, says Bartel, who directs the collaboratory.

"Since the rhythmic pulses of music can drive and stabilize this disorientation, we believe that low-frequency sound might help with these conditions," Bartel says. He is leading a study using vibroacoustic therapy with patients with mild Alzheimer's disease. The hope is that using the therapy to restore normal communication among brain regions may allow for greater memory retrieval, he says.

"We've already seen glimmers of hope in a case study with a patient who had just been diagnosed with the disorder," Bartel says. "After stimulating her with 40-hertz sound for 30 minutes three times a week for four weeks, she could recall the names of her grandchildren more easily, and her husband reported good improvement in her condition."

The goal of all of this work is to develop "dosable" and "prescribable" music therapy and music as medicine protocols that serve specific neurologic functions and attend to deficits that may result from many of these neurologically based conditions. Rather than viewing music only as a cultural phenomenon, Bartel says, the art should be seen as a vibratory stimulus that has cognitive and memory dimensions.

"Only when we look at it in this way do we start to see the interface to how the brain and body work together."

Low Frequency Sound Treatment Promoting Physical and Emotional Relaxationhttp://www.musicmedicinecollaboration.com/topic/low-frequency-sound-treatment-promoting-physical-and-emotional-relaxation/

Abstract
Low frequency sound has many applications in medicine but the efficacy and effectiveness of low frequency sound treatment in health prevention remains unclear. The purpose of this study was to explore the perspectives and potentials of physioacoustic chairs low frequency sound treatment when applied to daily activities amongst a sample of music students, faculty and/or staff, and to examine how participants view the benefits of the intervention for their well-being, health and health-related activities. The results show that the physioacoustic low frequency treatment added to a participants subjective well-being by increasing their physical and emotional relaxation level, decreasing pain and stress, and increasing emotion enrichment and concentration. The study served as a pilot, to confirm stakeholder interest and to gain information on the feasibility of a larger study.

Results
Low frequency sound intervention – increased well-being in daily life – physical and emotional relaxation. The results of this study show that low frequency sound treatment can have a positive effect for participantsâ€™ overall well-being in their daily life: â€œâ€¦I feel it has increased my well-being. I experienced joy in the chairâ€¦â€_ Increased well-being includes both physical and emotional relaxation. The descriptive categories created based on participants experiences focus on physical pain and tension, emotion enrichment, stress management, and concentration skills. The results show that pain and tension decreased, sense of peace, self-reflection, and clarity increased as well as focus and alertness.

Vibrotactile Stimulation in Rehabilitation of Early Brain Injury
http://www.musicmedicinecollaboration.com/topic/vibrotactile-stimulation-in-rehabilitation-of-early-brain-injury-5/

Afferent signals from the muscle's proprioceptors play important role in the control of muscle tone and in the facilitation of movements. Peripheral afferent pathway enables the restoration of connections with supraspinal structures and so includes mechanism of synaptic inhibition in the performance of normal movement. Different sensory stimuli, as vibrotactile stimulation, excite muscle's proprioceptors which then send sensorimotor information via spinal cord. In this way afferent signals promote cortical control and modulation of movements.

The goal of this study is to evaluate the effects of vibrotactile stimulation on the spasticity and motor performance in children with cerebral injury. Subjects included in this study were 13 children who were developing the classification of spastic cerebral palsy. For all children perinatal brain damage was documented by medical reports and neonatal brain ultrasound scan.

At the mean age of 3 years and 6 months subject underwent the assessment of motor development by Gross Motor Function Measurement (GMFM-88). Gross Motor Classification System (GMFCS) has been used to classify functions of lower extremities.

Therapeutic intervention was conducted once a week during 3 months. All subjects were stimulated with vibrotactile stimuli of 40Hz in duration of 20 minutes in order to reduce spasticity. After the ending of the treatment subjects underwent second assessment of motor performance and the classification of lower extremities functions. The results have shown that there was a significant improvement in motor performance, what has been seen in the facilitation of rotations, better postural trunk stability and head control and in greater selectivity of movements.

Further randomized, control trial investigations with bigger sample and included spasm scale are needed to gain better insight in the role of vibrotactile stimulation in the facilitation of normal movements.

This abstract presents pilot project for further research in this field.
You can find full text in Collegium Antropologicum 35 (2011) Suppl 1.: 57-63

Effects of Low Frequency Sound Treatment on the Consciousness State of the Alzheimer Patients Pilot Study

http://www.musicmedicinecollaboration.com/topic/effects-of-low-frequency-sound-treatment-on-the-consciousness-state-of-the-alzhe-4/

By Dr. Heidi Ahonen, Professor of Music Therapy, WLU, Waterloo, ON, Canada,
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Summary of Proposed Research

According to brain wave research, the 40Hz frequency from the thalamus area has an important role in the regulation of auditory-evoked potentials. (Galambos, Makeing, Tamachoff, 1981, Naatanen, 1992,). There has also been some evidence that the 40Hz brain wave is disturbed or disappears during in the early stages of Alzheimer disease (Llinas & Ribary, 1992; Ribary et al. 1991; van Deursen, Vuurman, Verhey, et. al.; Huang et al. 2000; Jelic et al. 1996; Jeong 2004; Koenig et al. 2005; Stam et al. 2002, 2003; Lustig et al. 2003). Llinas (1993) and Lehikoinen (1994, 1997) suggest that with auditory stimulation using a 40 Hz sound, it is possible to reinforce this thalamus frequency.

My research rationale is based on these assumptions. If Thalamus has a role in the cognitive brain functioning, and if the Thalamus frequency is disturbed in the early stages of Alzheimerâ€™s disease, I believe it would be fascinating to stimulate it with auditory stimulation using a 40 Hz sound, and investigate this stimulationâ€™s potential effect on cognitive brain functioning of the Alzheimer clients.

My research questions will investigate:
(1) Can the thalamus frequency be reinforced by the physioacoustic 40Hz intervention?
(2) Is the 40 Hz that have been disturbed or disappeared during the early stages of Alzheimer's coming back if stimulated by the 40 Hz frequency created by the Physioacoustic method?
(3) Do Alzheimer patients receiving the 40Hz frequency intervention achieve a greater degree of consciousness and reality orientation than those in the control groups?
(4) Do Alzheimer patients receiving the 40Hz frequency intervention achieve a greater degree of short and long term memory than those in the control groups?
(5) Can the Physioacoustic 40Hz frequency-intervention be a potential intervention for Alzheimer's clients?

During the various research trials Physioacoustic low frequency sound (Thalamus frequency 40Hz) is applied utilizing two control groups of Alzheimer patients, receiving either familiar music, or without familiar music. In a comparison of these two, it is anticipated that the application of the Physioacoustic low frequency sound will result in an increase of short-term consciousness, reality orientation, and affect both short-term and long-term memory capacities with Alzheimer patients. Both statistical analysis and qualitative analysis will be conducted. The combination of low frequency sound with familiar music is anticipated to be the most effective treatment modality with Alzheimer patients.

Experimental/control groups

(1) Group 1: During the 30 minute treatment these participants, while sitting in the

PA chair, will experience the 40Hz low frequency treatment and interview.
(2) Group 2: During the 30 minute treatment these participants, while sitting in the PA chair, will simultaneously experience the conventional music therapy (familiar music: listening/singing) and the 40Hz low frequency treatment + interview by the therapist. The music therapist will choose the applicable music.
(3) Control Group 1: During the four 30 minute treatments these participants, while sitting in the PA chair, will experience only conventional music therapy (familiar music: listening/singing) + interview by the therapist. The music therapist chooses the applicable music.
(4) Control Group 2: During the four 30 minute treatments these participants, while sitting in the PA chair, will be interviewed by the therapist only.

"Low Frequency Sound Treatment Promoting Physical and Emotional Relaxation among Music Students, Faculty and Staff"
http://www.musicmedicinecollaboration.com/topic/low-frequency-sound-treatment-promoting-physical-and-emotional-relaxation/

Abstract
Low frequency sound has many applications in medicine but the efficacy and effectiveness of low frequency sound treatment in health prevention remains unclear. The purpose of this study was to explore the perspectives and potentials of a physioacoustic chair low frequency sound treatment when applied to daily activities amongst a sample of music students, faculty and/or staff, and to examine how participants view the benefits of the intervention for their wellbeing, health and health-related activities. The results show that the physioacoustic low frequency treatment added to a participants subjective well-being by increasing their physical and emotional relaxation level, decreasing pain and stress, and increasing emotion enrichment and concentration. The study served as a pilot, to confirm stakeholder interest and to gain information on the feasibility of a larger study.