

# **“The Effect of Vibrotactile and Auditory Stimuli on Perception of Comfort, Heart Rate, and Peripheral Finger Temperature”**

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*Source:*

Journal of Music Therapy, XXVIII (3), 1991, p.120-134

*Location:*

Florida State University  
School of Music, Tallahassee, FL

*Date:* 1991

*Contact Information:*

Dr. Jayne M. Standley  
Department of Music Therapy  
Florida State University, Tallahassee, Florida

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This study was carried out to compare how music and the sound of a dentist's drill, were experienced by college students when presented both via a tape player, and via a Somatron. One hundred and thirty college students participated in this study. The author found that, regardless of the type of sound, vibrotactile stimulation appeared to “blunt perception” and students reported that both their comfort and discomfort levels were reduced. When the sounds were experienced via the Somatron, students' temperature was more likely to increase which, when measured via the finger, has been shown to indicate improved relaxation. The increases in temperature were found to be statistically significant ( $p < 0.05$ ). Students using the Somatron appeared to be more likely to have an decrease in their heart rate following the first sound that was presented (regardless of whether it was the music or the sound of the dental drill) and then an increase when the second sound was presented. This was the reverse case for the students that heard the sounds via a tape player. Those students who used the Somatron reported that they generally liked the experience regardless of whether the dental drill or the music were presented, in fact the sound of the dental drill was preferred more when experienced this way. Males were found to prefer their experiences with the Somatron more so than females.

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## **“The Effects of Vibrotactile Stimulation via the Somatron, on the Relaxation, Tension, Pain, and Mood Levels of Chronic Pain Patients”**

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*Source:* Unpublished pilot research project

*Location:*

Capitol Medical Rehabilitation Hospital  
Under the supervision of Dr. Jayne Standley  
Department of Music Therapy  
Florida State University, Tallahassee, FL

*Date:* Fall, 1993

*Contact Information:*

Catherine L.W. Szuch, MM, MT-BC  
Research conducted under the name of Catherine L. Walters  
919-479-3292

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This research consisted of a pilot investigation carried out with four adult, male, chronic pain patients. Each patient received twenty minute sessions of vibrotactile stimulation via a Somatron table using music that reflected their individual musical tastes. Patients rated their levels of pain on a 0-7 scale (0=no pain, 7= extreme pain) both before and after their session(s) with the Somatron. Generally, the patients did appear to gain some pain relief reporting slightly lower pain ratings at the end of their session(s) than they did before their session(s) started. The findings were not statistically significant, however, the number of patients that participated was small.

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## **“Music and its Effects on Mood”**

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*Source:*

Unpublished research completed in partial fulfillment of the requirements for BA Program  
Wheaton College, Norton, MA.

*Location:*

Center for Music Research  
Florida State University  
Tallahassee, FL

*Date:* 1993

*Contact Information:*

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This study looked at the mood of twenty-nine college students before and after they experienced one of three current popular songs, 1) "Vibeology" by Paula Abdul, 2) "So Hard to Say Goodbye" by Boys 2 Men, and 3) "Songbird" by Kenny G, vibrotactily via a Somatron. Readings of the student's finger temperature were taken throughout their experience as a measure of their level of stress. Overall finger temperature was found to increase during the vibrotactile experience. Increases in finger temperature have been reported to be a physiological indicator of reduced levels of stress. The increase in finger temperature was found to be statistically significant for each of the three songs used ( $p < 0.05$ ) suggesting that these particular musical selections were found to be relaxing by college students when experienced using a Somatron.

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## **"The Effectiveness of the Somatron to Enhance Relaxation"**

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*Source:*

Unpublished research paper

*Location:*

St. Mary's Hospital, West Palm Beach, Florida

*Contact Information:*

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Twenty individuals, patients and staff of a psychiatric facility, experienced fifteen minutes of music, vibrotactily, via a Somatron recliner. Twenty similar individuals experienced the same fifteen minutes of music, non-vibrotactily but under the same environmental conditions, while sitting in an ordinary reclining chair. The study's participants reported an overall reduction anxiety following the music regardless of how it was presented. These reductions in anxiety were found to be statistically significant. The researcher reported however, that the reduction in anxiety experienced by the individuals using the Somatron was greater than that experienced by the individuals listening to music via a cassette player while sitting in the recliner. This difference between the groups was also found to be statistically significant.

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## **Clinical Trial of a Music Generated Vibrotactile Therapeutic Environment for Musicians: Main Effects and Outcome Differences Between Therapy Subgroups"**

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*Source:*

Published Journal Article  
Journal of Music Therapy, XXXIV (1)  
1997, p. 2-32

*Location:*

North West England

*Date:* 1997

*Contact Information:*

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Having identified the prevalence of performance anxiety amongst professional musicians, the authors of this study compared a "music enhanced therapy", that utilized vibrotactile stimulation via a Somatron recliner along with traditional counseling techniques, with counseling alone, and counseling in combination with music. Each of the three counseling techniques were found to benefit the musicians who reported reduced levels of anxiety, improvements in mood, and a reduction in the amount of pressure they

reportedly felt before performing. The positive effects of the counseling interventions were also found to still be present 2 months after the study had been completed.

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## **“Music and Relaxation Techniques: A Combined Approach to Reduce Muscle Tension Level”**

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*Source:*

Unpublished research paper completed during a degree program at the University of Miami

*Location:*

University of Miami, Miami, Florida

*Date:* September, 1986

*Contact Information:*

Jose Hernan Serra

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Twelve college students participated in this research project which looked at the success of the Somatron in reducing muscle tension. All students received a relaxation session using a Somatron. One group of students were presented with a selected piece of “soothing music”, a second group of students were presented with a pre-recorded muscle relaxation program, and the remaining group of students were presented with the pre-recorded relaxation program and soothing music at the same time. Electromyographic equipment (EMG) was used to measure the muscle tension of the students. The researcher found that the students using the soothing music with the Somatron had a tendency for increased muscle tension whereas the students using the pre-recorded relaxation program with the Somatron and those using the relaxation program and soothing music together with the Somatron had a tendency for reduced muscle tension. The results were not found to be statistically significant and in fact were reported to be somewhat contradictory to verbal reports provided by the students. The students that used the soothing music with the Somatron reported that they felt a good degree of relaxation, despite the fact that their muscle tension was found to increase. Similarly, the students using the pre-recorded relaxation program with the Somatron felt that the program itself caused them to experience an increase in tension, despite the fact that their muscle tension was found to be reduced. The researcher suggested the small number of students involved in the study and the lack of adequate control over noisy distractions and other interruptions during the study as possible suggestions for the discrepancies that were found.

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## **"The Effects of Whole Body Acoustic Stimulation on Subjective Relaxation, Verbalization, and Visual Imagery among Professional Orchestra Musicians"**

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*Source:*

Paper presented at third triennial ESCOM conference, Uppsala, Sweden

*Location:* North West England

*Date:* 1997 (Research presented June 1997)

*Contact Information:*

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This study followed Dr. Brodsky's prior research "Clinical Trial of a Music Generated Vibrotactile Therapeutic Environment for Musicians: Main Effects and Outcome Differences Between Therapy Subgroups" published in the Journal of Music Therapy (See previous synopsis) and was presented at the Third Triennial ESCOM conference in Uppsala, Sweden.

Based on the results of the previous research, Dr. Brodsky and his research colleagues noted some differences in the responses of musicians using a Somatron recliner. These differences were found in the responses of these musicians to relaxation, verbalization, and visual imagery interventions implemented to deal with stress. Dr. Brodsky and his colleagues reported that they felt that the differences they observed could be attributed to "whole body stimulation" i.e., applying the vibrations of music to large surface areas of the body.

In order to look at this idea further, Dr. Brodsky and his colleagues designed another study to look specifically at the differences they had found previously.

Dr Brodsky approached professional orchestra musicians to volunteer to participate in this study by sending out questionnaires to orchestra management personnel at three cities in North West England. Fifty four professional musicians agreed to participate in the study. The average age of the musicians was 36 years and there were about equal numbers of men and women volunteering. The majority of the musicians were string players.

The study matched the volunteers both between as well as within the three different cities in an attempt to make sure that the musicians at each different location were similar for comparison.

Each participating volunteer was assigned at random to one of three study conditions:

- 1) “Verbal”. A relaxation program consisting of verbal conversation, visual imagery tasks and other relaxation exercises. Musicians were seated in the Somatron recliner but vibration was not used.
- 2) “Music”. A relaxation program consisting of verbal conversation, visual imagery tasks and other relaxation exercises paired with pre-recorded music. Musicians were seated in the Somatron recliner but again, vibration was not used.
- 3) “Somatron”. A relaxation program consisting of verbal conversation, visual imagery tasks and other relaxation exercises, again paired with pre-recorded music but this time the music was played through the speakers embedded in the Somatron recliner. Therefore the musicians in this group were seated in the Somatron recliner and did experience the vibration.

Each musician, regardless of group, received 8, individual, 50 minute relaxation sessions over a period of 8 weeks. At the beginning and end of every session, the musicians completed copies of the questionnaire “Profile of Mood States” (POMS).

At the end of the study, the researchers found several statistically significant results showing that patients experienced a reduction over time of tension-anxiety, depression-dejection, anger-hostility, and confusion-bewilderment. However, these results were found in all groups indicating that all three of the relaxation programs were beneficial to the musicians that participated. Dr. Brodsky and his colleagues then looked more closely at the specific relaxation interventions to see if differences between the three groups could be identified. Differences between the groups were noted as follows:

**Verbal Relaxation:** Musicians assigned to the Somatron group were found to have more emotional responses to this intervention, some individuals were reported to experience unexpected “flooding ” of emotions, other times musicians reported that they were elevated to a “peak”.

**Verbal Conversation:** Musicians were asked to talk about the meaning and impact that music had had in their lives prior to and during the process of becoming a professional

musician. Both the musicians assigned to the “Music” group and those assigned to the “Somatron” group were found to give much more in-depth and emotional descriptions of their experiences. The musicians assigned to the “Verbal” group seemed rather to provide much shorter and less in-depth explanations.

**Visual Imagery:** This exercise involved various imagery exercises including having musicians visualize performing on stage. The researchers noted that only musicians assigned to either the “Music” or “Somatron” groups actually reported feeling sensations as if they were actually performing on stage.

Dr. Brodsky and his colleagues concluded that music as well as music vibration appeared to both enhance the experience of imagery as well as evoke more memories and associations. Comparing the “Music” and the “Somatron” musicians further, the researchers found that the imagery of the musicians in the “Music” condition was both shorter and mono-thematic than that of the musicians in the “Somatron” condition.

Dr. Brodsky discussed the limitations in the methods they used to interpret the sessions with the musicians as possible reasons for the limited statistical significance. However, he also pointed out that his findings were consistent with the findings of other researchers who have reported that the effects of using the Somatron may be more subtle and indirect.