



**NEXT WAVE** ®

# **FEASIBILITY REPORT**

**Relating to**

# **COPRATE OCCUPATIONAL HEALTH**

**(BLOOD PRESSURE MONITORING)**

## 1.1. Introduction

The Physioacoustic therapy chair has successfully been used in hospitals and occupational health for years. It gives employees many benefits both physical and mental over a long period. The use of the set programmes will guarantee a comfortable 10 to 40 min. treatment.

## 1.3. Conclusions

In consideration of the above information, if the Physioacoustic treatment will be efficiently adopted into the corporations as a part of personnel training and preventative form of occupational therapy, the costs per employee are marginal compared to the benefits obtained. Enclosed is an experiment of the Physioacoustic Method in the preventative corporate health care, carried out in Finland. This experiment shows the latest scientific figures of improvement in the working ability as well as reduction of level of stress and blood pressure amongst the employees.

Along with the European Union's guidelines for the Social Charter which inevitably will sooner or later be imposed as law in every EU-country, more awareness amongst the employers in improving the occupational health is essential. The Physioacoustic Method might be an answer to the dilemma.

**Corporate Health Care Experiment  
at  
The Sibelius Academy**

***A Suitability Study of the Physioacoustic  
System as a Treatment Device in  
Preventative Corporate Health Care***

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## INDEX

1. Physioacoustic Corporate Health Experiment at the Sibelius Academy
  - 1.1. The Physioacoustic Therapy as a Method and Device in the preventative Corporate Health Care
  - 1.2. The Experiment at The Sibelius Academy
  - 1.3. The Assessment of Results
    - 1.3.1. Changes in Blood Pressure
  - 1.4. Feelings of Pain and Ache, Relaxation and Concentration Ability
  - 1.5. Anxiety
2. Conclusions

References

Appendix

Questionnaire used in the Experiment

## **1. Physioacoustic Corporate Health Experiment at the Sibelius Academy**

The development of preventative corporate health care has become one of the most important issues of today. There are many reasons for this. Demand and pressure at work have grown to the extent that many employees are starting to suffer from severe psychic and psychosomatic symptoms. The work tasks are changing rapidly, which has also led to difficulties in adaptation. From the employers' point of view, the problem is the ever increasing number of employees on sick leave and the frequent change in personnel. Educating a new employee to take over someone else's tasks costs a lot. Also early retirements due to psychological reasons are alarmingly increasing. Based on these facts governments and corporations have to pay more attention to employees' physical and mental condition.

### **1.1. The Physioacoustic Therapy as a method and device in the preventative corporate health care.**

The Physioacoustic device has been invented by Finnish experts as a biophysical product. Infra sounds that are being used in the device are controlled by computer. The equipment has been fitted into an ergonomically designed therapy couch. It is easy to use, so the employees can use- the device by themselves after a short introductory period.

To this day, there have been numerous experiments which have proved that significant help has been obtained for most stress related symptoms, such as pains and aches in neck, shoulder and back, tension, anxiety, period pains, sleeplessness and high blood pressure, due to excess stress.

Earlier experiments have been conducted in the insurance company Kansa (Lehikoinen, 1992), Helsinki University Hospital (HYKS ), the Clinic for Psychiatry (Naukkarinen & al. 1991 ) and at the factory of Valio Turenki, a dairy company, (Erkkila, 1996), (Paasivaara & Urpalainen, 1996)

At Kansa insurance company 32 employees took part in the experiment. These people had been randomly selected and divided into two groups: test group and reference group. The test group received infra sound and the reference group took part in a self esteem increasing and work problem tackling stress management course. In the assessment of the stress level Spielberger's anxiety chart was used. The results show far better reduction in the level of stress for almost everybody in the test group than those in the reference group. This does not however indicate that there would be no benefits obtained from the stress management courses.

## **1.2. The Experiment at the Sibelius Academy**

The funding for the experiment was arranged by the Department of Finance. The responsibility for executing the project laid with psychologist Petri Lehtikainen and physiotherapist Jaana Kastren. A medical supervisor and expert was Doctor Juhani Lukkari and the Administrator Timo Saarinen.

In the experiment the suitability of the Physioacoustic Method as a treatment for minor work related illnesses as well as a preventative form of treatment were studied.

At the beginning there were 38 teachers and office workers participating in the experiment of whom 26 completed it. The measurements were taken at the beginning, in the middle (71 treatments) and at the end of the study, in total 15 treatments, each lasting 30 min. were given for each participants.

The measurements were carried out before and immediately after treatment for following values:

- Blood pressure systolic
- Blood pressure Diastolic
- Pulse
- Feelings of Pain
- Tension
- Concentration
- Anxiety (Spielberger)

## **1.3. The Assessment of Results**

### **1.3.1. Changes in the blood pressure**

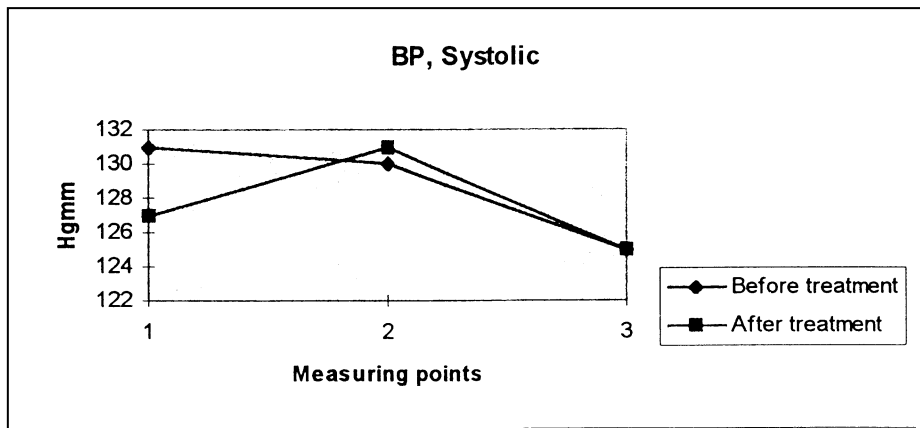
The assessment of changes in blood pressure was done by observing the mean values in the whole population. Thereafter participants with a diastolic blood pressure of 90Hgmm and over were studied separately. Generally speaking, blood pressure showed tendency to decline.

It could be observed in the second measuring a slight increase in diastolic and systolic blood pressure. Measuring for the last time the increase of diastolic blood pressure could only be observed in the mean value of the whole population. Otherwise, the values did not vary before or after the treatment, and it can be noted as well that the increases were not significant.

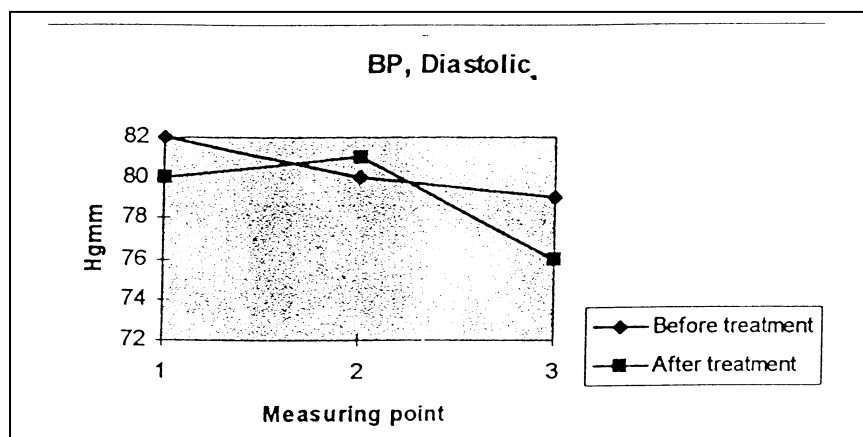
However, the decrease in blood pressure during the experiment, especially in the problem group with higher pressure, was significant, systolic blood pressure for the whole population was dropping from 131 to 125Hgmm and

the diastolic pressure from 94 to 82HgmL This finding is, of course, only an indication.

This study should, however, be repeatedly carried out in order to establish whether permanent decrease may be obtained with the Physioacoustic device.



Analysed from the above table, it is clear that systolic blood pressure significantly decreases after the first session. After the 7h treatment there is a slight increase in blood pressure, Which might be explained by the fact that body always tries to resist any change from its normal state. After the last treatment this kind of resistance cannot be found anymore.

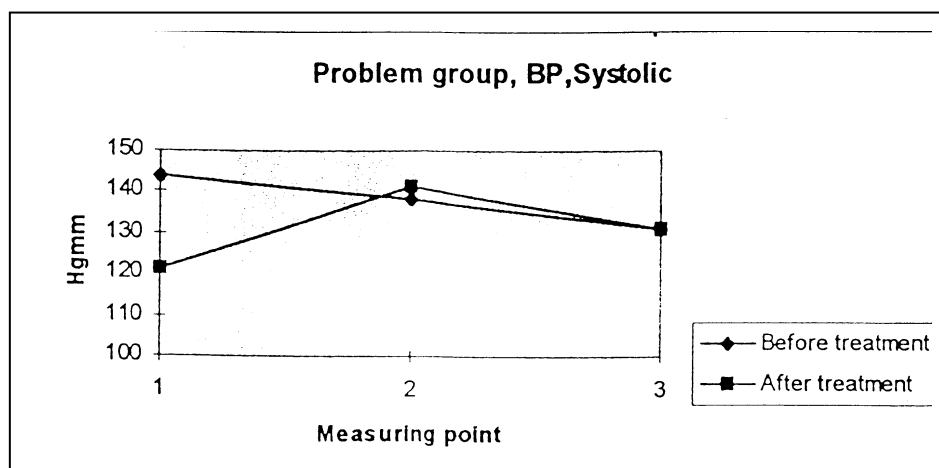


There is a tendency in reduction of diastolic pressure in the whole group. In the middle of the treatment period some provocation during the treatment can be noted.

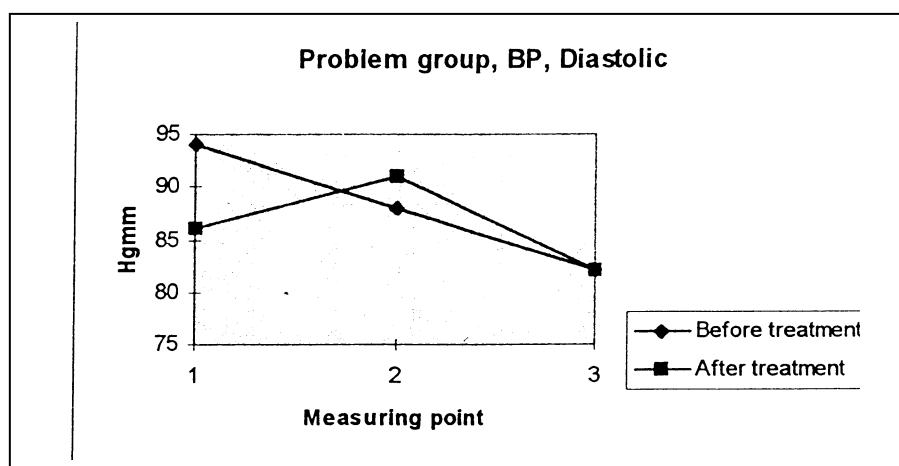
After the last treatment the diastolic pressure is decreasing. In cases of blood pressure being at a normal level pressure reduction during treatment is of a temporary nature and will normalise after a few minutes.

The problem group consisted of persons whose blood pressure was 90Hgmm or even higher. Observed from the table above that the average blood pressure for this group was 144 Hgmm at the beginning.

There was a remarkable decrease after the first treatment. After the 7<sup>th</sup> treatment the systolic pressure did slightly raise but this phenomenon disappears towards the end of the treatment period and the same measure of 131 Hgmm is obtainable before and after the last treatment.



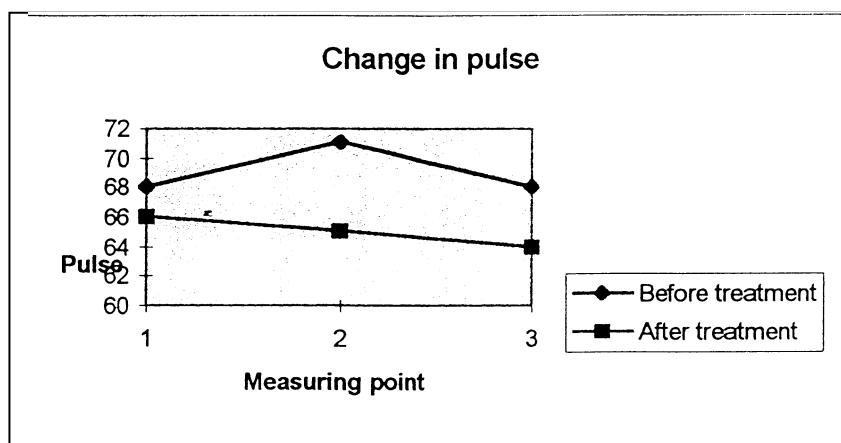
The systolic blood pressure of the people of the problem group appears to adjust itself to a significantly lower level at the end of the treatment period without any fluctuations in the values before and after treatment. The average change in the diastolic pressure was also studied in the problem group.





The previous table shows the diastolic pressure at the beginning of the treatment period that appears to be 94Hgmm. After the first treatment the pressure is seemingly reduced. On the other hand, in the middle of the treatment period, the pressure increases.

The same resistance which was noticed in the increased mean values of the whole population is obvious in the problem group as well. After the last treatment this phenomenon cannot be found.

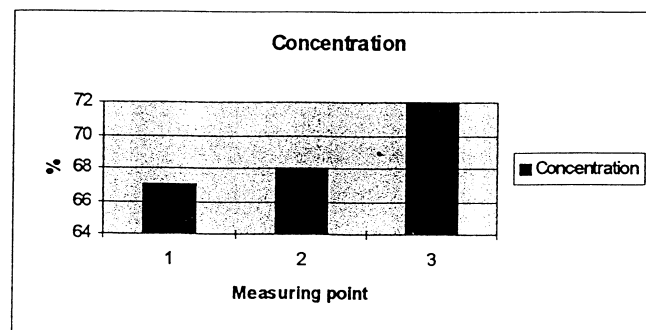
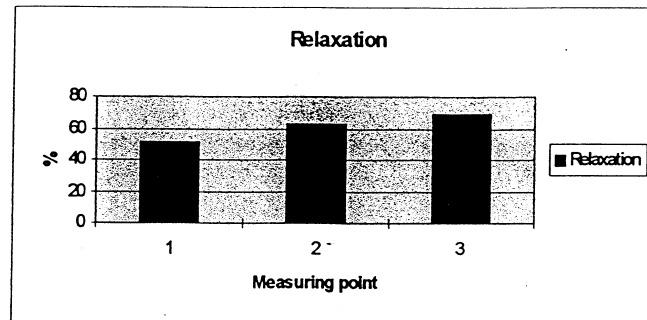
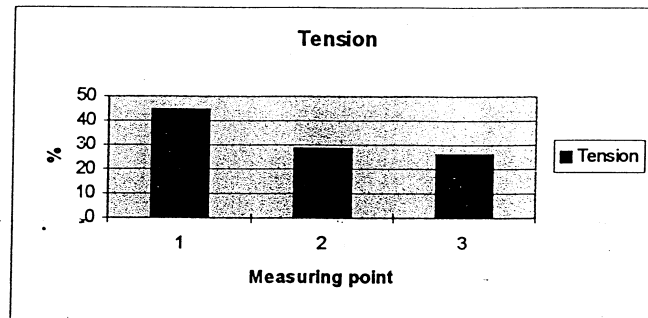
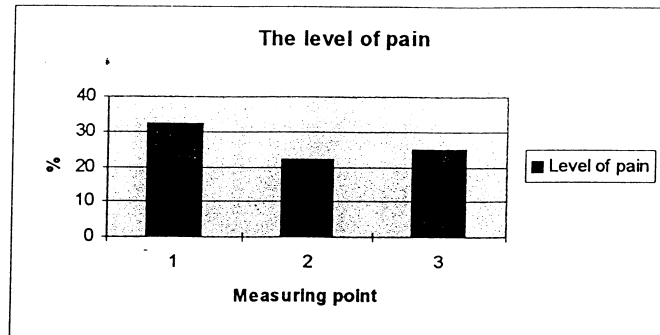


The changes in pulse are insignificant. A slight increase in pulse in the middle of treatment period is notable.

#### 1.4. Feelings of pain and ache, relaxation and concentration ability

Feelings of pain and ache were estimated according to which parts of their bodies the participants recorded the feelings of pain on the chart. With the help of a segmented fine the intensity of pain was recorded.

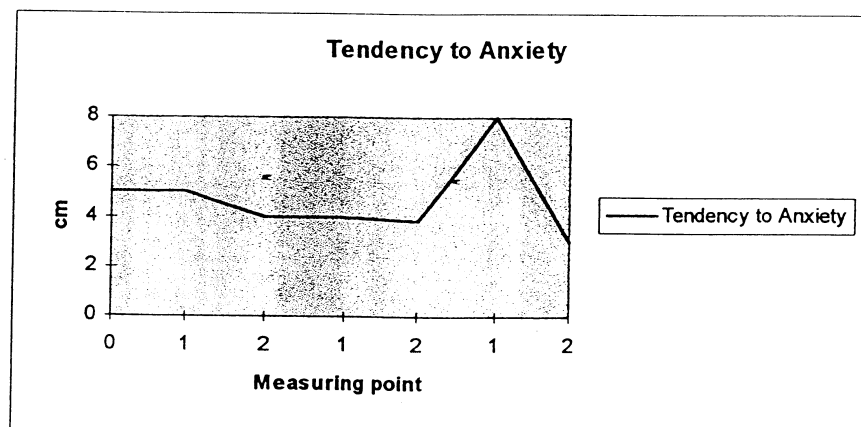
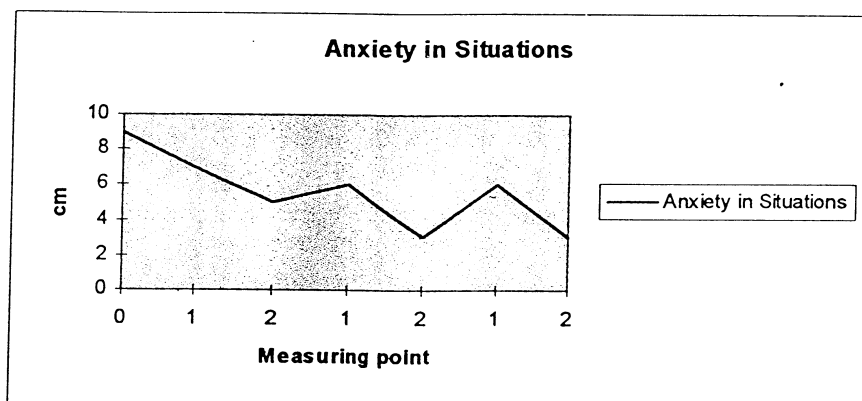
The results show remarkable reduction in the level of pain. The abilities to concentrate and relax were also improved.



## 1.5. Anxiety

The level of anxiety was measured by Spielberger's anxiety chart. This chart consists of two elements: In the first one the level and nature of anxiety at a given moment were estimated. The second element estimates the tendency to react to anxiety in general

Both elements show a declining trend. It should, however, be noted that there is an increase in anxiety during the last treatment which might be explained as an independent reaction during treatment period or as increased susceptibility.



## 2. Conclusions

All measures indicate that the Physioacoustic treatment has got positive effects on both physical and mental factors. Therefore, it can be concluded that using infra sound as a part of preventative treatment in the corporate health care is highly plausible.

The results of this experiment can be considered to be very reliable because similar kind of findings in parallel studies have been obtained earlier.

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