

## Anti stress app [Abstract]

Hagen Malberg, Liudmilla Ziaziulchyk, Max Braer, Martin Hoffmann, Aline Mittag, Robert Huhle, Sebastian Zaunseder, Hendrik Bonnemeier, Andreas Heinig, Wolf-Joachim Fischer

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# Anti Stress App

Hagen Malberg, Liudmilla Ziaziulchyk, Max Braer, Martin Hoffmann, Aline Mittag, Robert Huhle, Sebastian Zaunse-  
der, Institute of Biomedical Engineering, Technical University Dresden, Germany,  
Hendrik Bonnemeier, Medical Clinic III of Cardiology and Pulmology, University Schleswig-Holstein, Campus Kiel,  
Germany  
Andreas Heinig, Wolf-Joachim Fischer, Fraunhofer Institute for Photonic Microsystems, Dresden, Germany  
hagen.malberg@tu-dresden.de

## Introduction

Stress becomes a more prominent health related problem in the western industrial countries. Methods of active treat-  
ment of stress mostly are out-of-favour in our technical environment. In this project, we developed a novel application  
of smart phones, based on approaches for stress reduction by controlled respiration and music.

## Methods

We designed a stress treatment system based on the smart phone Model Samsung S2. The complete system contains a  
mobile pulse oximeter (made by Fraunhofer IPMS), a blue tooth data transfer protocol, and the mobile phone. Software  
was designed to realize the following functions: display the recorded signals, pre-processing and beat extraction, the es-  
timation of parasympathetic and sympathetic nerval tone by heart rate variability measures, comparison of the calcu-  
lated parameters to normal values, acoustical and graphical guidance to relaxation exercises and a second (check) meas-  
urement to assess and to show the outcome of treatment.

## Results

The system had been assessed by several healthy volunteers. In all volunteers, the regulatory effects of the suggested  
respiration exercises could be shown by the synchronous data analysis. But the decrease of the sympathetic tone after  
the treatment showed individual results.

## Conclusion

The presented system showed the applicability of smart phone systems in biomedical data recording and biosignal  
analysis.

The IBMT student group awarded the student competition 2011 of the BMBF “Was macht gesund?”