AI Music Therapy System for Customized Health Applications

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Abstract

The research and development of the proposed AI Music Therapy System has used Bio-feedback Sensor measurement of the human Autonomic Nervous System's digitalized HRV (Heart Rate Variability), AI technology and audio music stimulation, Binaural beats and other related technologies with system integration, forming a progressive healing system with complete accurate health data and multiple interaction functions between the Autonomic Nervous System and music with stimulation. According to the pre-clinical test data, whether it is aimed at improving sleep, relaxing after waking up, or improving attention and other related health functions, this proposed method developed the AI Music Therapy System has the effect of increasing the SDNN value of the Autonomic Nervous System based on HRV test data, and improving the LF/HF value towards a balanced and healthy direction. According to WHO announced that more than 75% of the world's "sub-healthy ethnic groups" and the medical units also have 20% demand, but physiological instruments in the medical field must have a medical material certificate. Through the integration of heart rate IC and headphones, a system can be developed to interactive the stream music. It can interact with the Autonomic Nervous System health AI technology research that improves Mind and Body State.

__Keywords__: AI Music Therapy System, Audio Music Stimulation, Binaural Beats, Autonomic Nervous System.

Introduction

The interdisciplinary team led by Prof. Jeff (Chih-Fang) Huang, has integrated computer music, AI music technology, and brain neuroscience for many years, and the professionally crafted computer music library can achieve bio-feedback interaction functions, becoming a perfect AI Music Therapy System. A product aimed at adjusting the Mind and Body State of the "Sub-healthy Group", using HRV (Heart Rate Variability) physiological monitoring, analyzing the user's autonomic nerves corresponding to music stimulation, and generating appropriate customized music (interactive streaming music) to promote Mind and Body balance.

Methods

The AI Music Therapy System is an interactive streaming music of physiological information with real-time bio-feedback, automatic music prescription and automatic adjustment of music stimulation. The core technology lies in the planning and production of interactive streaming music, such as entrusted music production, music authorization, computer composition, and AI Music Therapy System "Interactive Program" development, etc.

Results

The AI Music Therapy System uses Streaming Music that Interacts with Bio-feedback Sensor(s) data. The most mature personal wearable health device product is HR (Heart Rate), and our team can convert various wearable heart rates into complete human Autonomic Nervous System HRV (Heart Rate Variability) data through the cloud. Both can interact with the music library of the AI Music Therapy System. After AI interprets the Autonomic Nerve Data, according to the user's individuality and needs, it automatically adjusts the music elements to change the Music Stimulation and then adjusts the Autonomic Nerve System balance and achieves a curative effect. So it can integrate HR chips (placed on the earphones) + HRV cloud conversion + interactive streaming music = the world's most complete AI Music Therapy System.

Experiment and Result: Binaural Beats Music Therapy Preliminary Test Results (for Sleep)
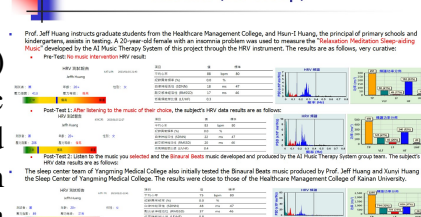
Experiment and Result: Binaural Beats Music Therapy Preliminary Test Results (for Attention)
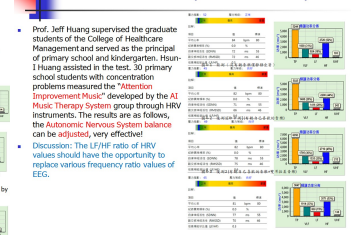
Conclusion

AI Music Therapy System uses HRV (Heart Rate Variability) sensor and AI technology to process the accurate health. Multiple interactive functions between the Autonomic Nervous System and Music with Stimulation, including sleep, attention, …etc., can improve sleep quality, relax after waking up, or improve attention, for the Sub-healthy group.

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