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## **OUR HEART LIKE RHYTHM AND OUR BRAIN LIKE MELODY AND HARMONY**

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Music interconnection with society can be seen throughout history. Every known culture on the earth has music. Music seems to be one of the basic actions of humans. However, early music was not handed down from generation to generation or recorded. Hence, there is no official record of "prehistoric" music. Even so, there is evidence of prehistoric music from the findings of flutes carved from bones.

The influence of music on society can be clearly seen from modern history. Albert Einstein is recognized as one of the greatest scientists who has ever lived. A little known fact about Einstein is that when he was young he did extremely poor in school. His grade school teachers told his parents to take him out of school because he was "too stupid to learn" and it would be a waste of resources for the school to invest time and energy in his education. The school suggested that his parents get Albert an easy, manual labor job as soon as they could. His mother did not think that Albert was "stupid". Instead of following the school's advice, Albert's parents bought him a violin. Albert became good at the violin. Music was the key that helped Albert Einstein become one of the smartest men who has ever lived. Einstein himself says that the reason he was so smart is because he played the violin.

In general, responses to music are able to be observed. It has been proven that music influences humans both in good and bad ways. These effects are instant and long lasting. Music is thought to link all of the emotional, spiritual, and physical elements of the universe. Music can also be used to change a person's mood, and has been found to cause like physical responses in many people simultaneously. Music also has the ability to strengthen or weaken emotions from a particular event such as a funeral.

Rhythm is also an important aspect of music to study when looking at responses to music. There are two responses to rhythm. These responses are hard to separate because they are related, and one of these responses cannot exist without the other. These responses are -

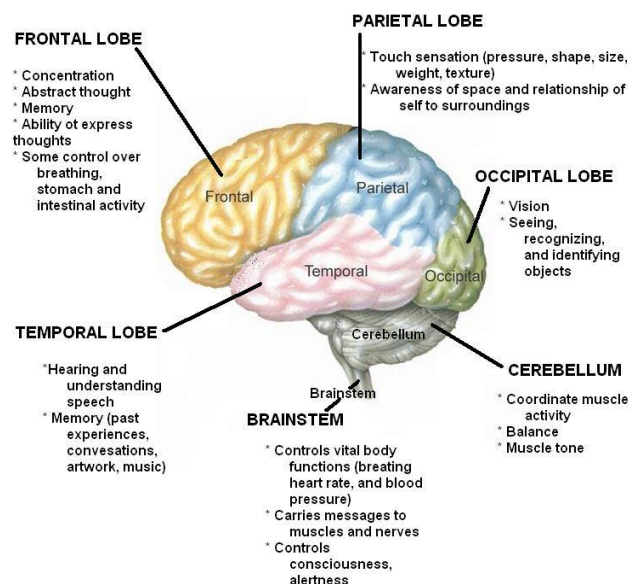
- (1) the actual hearing of the rhythm and
- (2) the physical response to the rhythm.

Rhythm organizes physical movements and is very much related to the human body. For example, the body contains rhythms in the heartbeat, while walking, during breathing, etc. Another example of how rhythm orders movement is an autistic boy who could not tie his shoes. He learned how on the second try when the task of tying his shoes was put to a song. The rhythm helped organize his physical movements in time.



It cannot be proven that two people can feel the exact same thing from hearing a piece of music. Responses to music are easy to be detected in the human body. Classical music from the baroque period causes the heart beat and pulse rate to relax to the beat of the music. As the body becomes relaxed and alert, the mind is able to concentrate more easily. Furthermore, baroque music decreases blood pressure and enhances the ability to learn. Music affects the amplitude and frequency of brain waves, which can be measured by an electro-encephalogram. Music also affects breathing rate and electrical resistance of the skin. It has been observed to cause the pupils to dilate, increase blood pressure, and increase the heart rate.

The Power of Music on Memory and Learning.



Music is processed in all areas of the brain and has the ability to access and stimulate areas of the brain that may not be accessible through other modalities.

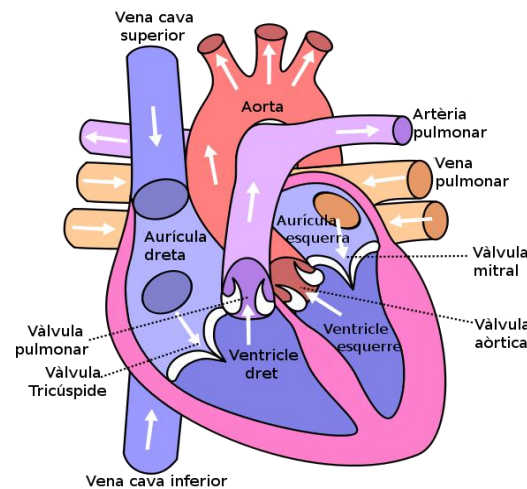
Research shows that music enhances and optimizes the brain, providing better, more efficient therapy and improved performance of cognitive, motor, and speech/language tasks. Studies show that people perform these tasks better with music than without.

Research supports parallels between non-musical functioning and music-assisted tasks, which provides a scientific rationale for the use of music in therapy.

Music beats have a very close relationship with heart beats. Music having **70-75** beats per minute equivalent to the normal heart beat of **72/minute** has a very soothing effect likewise rhythms which are slower than **72** beats per minute create a positive effect on the mind, heart and body. Rhythms which are faster than the heart rate excite and rejuvenate the body.



The flow of blood through the heart follows a very deliberate path to ensure that blood oxygenated from the lungs passes through major arteries and delivered to body tissue. This process occurs on an average of 72 times a minute, pumping about 2,000 gallons worth of blood every day.



Regular, rhythmic contraction of the myocardium—the thick, middle layer of cardiac muscle—provides the pumping pressure that allows blood to flow through veins and arteries.

American Heart Association cardiovascular Dr. Bernardi explain, “We are interested in the effects of the autonomic nervous system on circulation and the heart. There are rhythms in the cardiovascular system and the autonomic nervous system that can send information to the blood vessels and the heart and affects these rhythms. But talking about rhythms involves the idea that external rhythms can influence internal ones.”

Initially, Dr Bernardi investigated the effects of research on how controlled breathing techniques such as those used in yoga, meditation, and prayer could help regulate internal rhythms. “If, instead of breathing naturally, you superimpose a slow, steady rate of respiration on the body, you modulate the whole cardiovascular system,” he says. In one study, he found that reciting either the prayer or a yoga mantra enhanced heart rate variability and baroreflex sensitivity by slowing the breathing rate down to 6 breaths per minute. In a more recent study, he has shown that breathing at this slow rate reduced blood pressure and enhanced baroreflex sensitivity in hypertensive patients. After several studies had shown that one could modulate internal rhythms through controlled breathing, Dr Bernardi became interested in whether other ways existed to modulate the rhythms of the autonomic nervous system. He says, “We wondered if perhaps other external stimuli could have an effect on the rhythms of the autonomic nervous system, and we decided to test the effects of different types of music.” The most surprising observation had to do with the effect of the 2-minute silence in the middle of the music sequence. It had a greater impact in reducing heart rate and blood pressure than did the slowest-tempo music. “The silence had a totally different effect on heart rate and other parameters when it came after music than it



did at baseline,” Dr Bernardi recalls. “Silence between music had the most profound relaxing effect. In fact, it acted as though it were music with a zero frequency.” He explained this effect as similar to the relaxed state produced during transcendental meditation: “First, you have to concentrate hard, giving your attention to something. Then, when you release the attention, you become very relaxed,” he said. “Music may be able to achieve the same effect.”

## MUSICAL BACKGROUND AND HEART RATE

Whether or not a person has a background in the arts, specifically music, may determine just how much her heart rate is altered while listening to music. Dr. Peter Sleight, lead researcher of the University of Oxford music study, compared heart rate changes according to musical training. The musicians in the study group were found to breathe faster and experience more of a heart rate increase than those who did not have a musical education. The suggested reason for this phenomenon is that musicians understand the complexity of the rhythms of music and unconsciously adjust their bodies' respiration and heart rates to match the beat.

## RESEARCH

Research has shown us that music does have healing effects. The stimulate the brain, ease tension and remove fatigue. The effect of Music Therapy may be immediate or slow, depending upon number of factors like the subject, his mental condition, environment and the type of Music, selected for having the desired effect. Music Therapy largely depends on individual needs and taste. Before using music as Therapy it must be ascertained which type of music is to be used. The concept of Music therapy is dependent on correct intonation and right use of the basic elements of music. Such as notes (swara) rhytm volume, beats, and piece of melody. There are countless ‘Ragas’ of course with countless characteristic peculiarities of their own. That is why we can not establish a particular Raga for a particular disease. Different types of Ragas are applied in each different case.

Music is an important part of many people's lives. Whether recalling good times or bad, most people remember a certain song that was playing in the background. Music is tied into human emotion and can make a person happy, sad, anxious or self-confident. Music is also connected to physiological responses within the body, including heart rate. The relationship between music and heart rate is complex and can be beneficial to health, especially for those who experience heart problems and chronic pain.

There is a growing awareness that ragas could be a safe alternative for many medical interventions. Music improves the immunity of the body. It has been observed that medical treatment with Music Therapy has reduced the intake of antibiotics and pains killers over a period of time. Simple altenative musical rhythms with low pitched swaras as in bhajans and kirtans are the time tested sedatives.

Music will help improving human SOUL for collaborative learning for total life. SOUL will be grown by See, Observe, Understand and Learn from human nature including sound with sense. It is necessary that a group of exponents in Indian ragas join experts in medical field to help



evolving a scientific system of raga therapy for the most common illness of the modern times; Stress and Stress Related Disorders and Cancer.

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