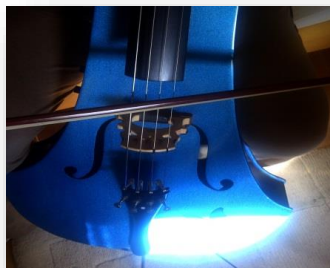


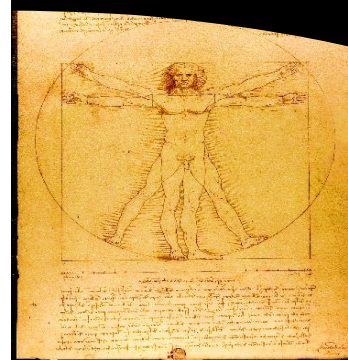
[www.neuro-morphism.com](http://www.neuro-morphism.com)



## MUSIC

July 2014

Issue #3



## THE MOZART EFFECT

The potential of music therapy –philosophically known in the Western World since the Pythagoreans- is rapidly unfolding in the empirical setting introduced by contemporary neuroscience. Different neuroscientific studies over the past two decades have shown that the exposure to the first movement of Mozart's *Sonata for Two Pianos in D Major K.448* decreases epileptiform discharges. The so called *Mozart Effect*, first described in 1993 by Rauscher et al., is not yet fully understood, though according to one hypothesis, the music of K.448 superorganizes the microanatomy of the cerebral cortex allowing it to resonate in a normalized suboptimal functioning (Hughes et al., 1998), having a therapeutic effect over the patient.

However, the same piece played on a digitalized string version did not produce the same effects. In fact, the more complex harmonic spectrum of the

strings -with their significant increase in high harmonics in relation to the spectrum of the piano- did not reduce the epileptic discharges at all. From this, it could be inferred that what works, since timbre is the particular harmonic series of a fundamental tone and the relative amplitudes among those harmonics, is a specific set of simple series with few high harmonics.

### References

- Hughes, J.R. et al.1998. *The "Mozart effect" on epileptiform activity*. Clin. Electroencephalogr. 29, 109—119.  
Lung-Chan Lin et al. *The long-term effect of listening to Mozart K.448 decreases epileptiform discharges in children with epilepsy*. Epilepsy & Behavior 21 (2011) 420–424.  
Rauscher, F.H., Shaw, G.L., Ky, K.N., 1993. *Music and spatial task performance*. Nature 365, 611.

## MUSICAL PHYSIOTHERAPY

Music therapy has become a very popular evidence-based intervention whose benefits extend over a wide variety of clinical settings. Whether as an aid for patients with chronic pain, children with migraines or cases of psychotic disorders, music has become a very useful tool for non-pharmacological treatment, facilitating movement, creating positive interactions, and improving cognitive and emotional states in the patient [Bernatzky, 2011].

Music can be used actively or passively. Active music intervention requires the patient, with the help of a therapist, to create music and sometimes bodily movements, which can complement physiotherapeutic protocols in different ways, for music helps to reduce significantly the perception of effort [Seath and Thow, 1995] and makes more enjoyable intensive repetitive rehabilitation.

However, the particular choice of music requires careful considerations and preparation by the practitioner, for -as it has been known since the Greeks- and current music therapy research shows, different musical structures produce different psycho-biological effects.

### References

- Bernatzky, Guenther et al. [2011] *Emotional foundations of music as a non-pharmacological pain management tool in modern medicine*. Neuroscience and Biobehavioral Reviews 35 (2011) 1989–1999.  
Seath, Lorna and Thow, Morag. *The Effect of Music on the Perception of Effort and Mood During Aerobic Type Exercise*. [1995] Physiotherapy. October 1995. Vol 81 no.10.

## MUSIC AS ANXIETY RELIEVER IN CANCER TREATMENT

A study by Lee-Chen Chen et al. [2013] has shown the positive effects of music therapy in integrative oncology for the treatment of different symptoms, such as pain, mood disturbances and communication issues. According to this research, the use of music with slow tempos (60-80 beats per minute) and low dynamics reduces anxiety levels and systolic blood pressure

in pre-radiotherapy settings.

### References

- Lee-Chen, Chen et al. *Fifteen-minute music intervention reduces pre-radiotherapy anxiety in oncology patients*. European Journal of Oncology Nursing 17 (2013) 436e441.

## NEURO-MORPHISM

**Scientific Translation and Editing for Physiotherapy, Neuroscience and Medicine**

### WRITING SOLUTIONS

**Translation Technology and Human Expertise at your Service**

### ENGLISH AND SPANISH

We translate, edit and proofread all sorts of scientific texts such as academic papers, abstracts, reviews, theses and dissertations, research projects, books and book chapters, material for conferences and congresses, brochures, marketing material, and any other professional document. Our services include as well the translation and editing of reports, certificates, protocols, prospects, web pages, etc.

## Events

**AMTA 2014 Conference, "Pursue Your Passion for Music Therapy"**  
November 06-09, 2014  
The Galt House  
140 N 4th St, Louisville  
Louisville, KY, 40202 USA

*"Music therapy has become a very popular evidence-based intervention whose benefits extend over a wide variety of clinical settings."*



## Neuro Quotations

*"Galen indeed discussed the metre of the pulse, or its rhythm along the lines of musical nomenclature. Thus we would have double time, three-four time, common time, four-five time, five-six time, and so on".*  
(Avicenna 980–1037 AD)