

P89: Evaluation of brain areas activated when listening to a classical music stretch in musicians and non-musicians: performing an electroencephalogram (EEG)

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Introduction: The interest on the effects of musical practice in the human brain has been increasing considerably in the last few decades. Several studies showed that musicians have structural and functional brain aspects that are not shown in non-musicians, related with the age in which they started the musical practice. Such organization results in cognitive differences between musicians and non-musicians, as it's been shown in several studies.

Objectives: This study's main objective is to evaluate the activated brain's circuits and areas during musical listening and evaluate the effects of musical practice in work memory.

Materials and Methods: Brain activity was recorded in 16 musicians and 16 non-musicians during the listening of a musical stretch of classic music (Frédéric Chopin - Nocturne op.9 No.2) through an electroencephalography (EEG), using the 10-20 International System of electrode placement with 19 channels. The data was analysed using *power* EEG combined with quantitative EEG. To evaluate working memory we used the digit span subtest, chosen from a set of tests from WAIS (Wechsler Adult Intelligence Scale).

Results and Discussion: During music listening, alpha activity significantly decreased in musicians and increased in non-musicians in the parietal-occipital area. Theta activity had the opposite behaviour, significantly increasing in musicians and decreasing in non-musicians in the frontal and central areas. On the working memory subtest musicians had better performance when compared with the non-musicians. We also can conclude that the earlier the music training, the better the performance on working memory subtests.

Conclusion: With this study, besides the contribution for better understanding of musical practice on neural system's development and functioning, underlying the cognitive capacities, we were able to understand the implications of musical practice in health sector and in education.

References

1. Schlaug, G. (2001). The brain of musicians: a model for functional and structural adaptations. In R. J. Zatorre & I. Peretz (Eds.), *The Biological Foundations of Music*.