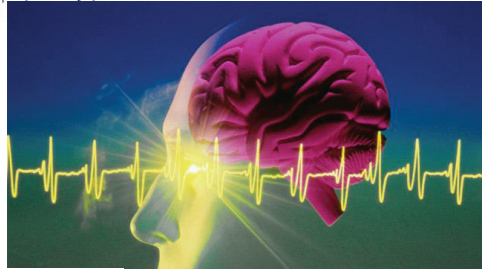
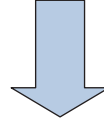
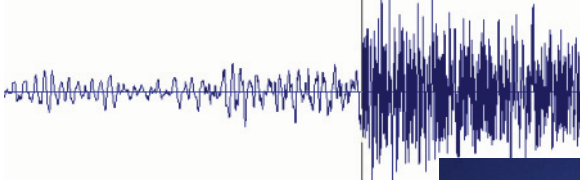
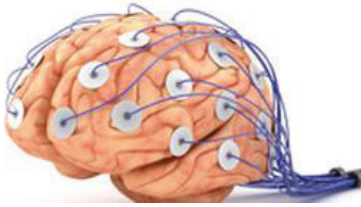


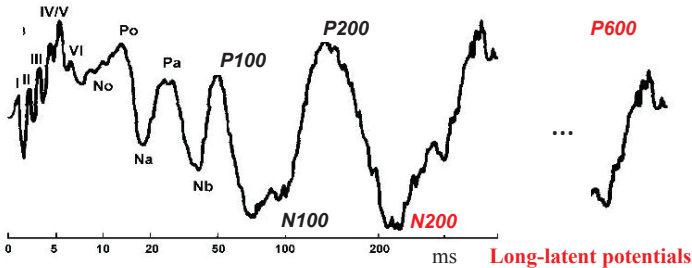
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| Research (What is it about?) | Effects of musical tonal modulation on brain electrical activity | |
| UNN authors | <i>Parin S.B., Radchenko G.S., Gromov K.N.</i> | |
| We find (The result) | The correlation has been found between temporal-amplitude characteristics of brain electroencephalogram (EEG) and the modulation of music-like signals. The possibility of individually tuned music therapy is stated | |
| Abstract | <p>It is known that music has the ability to “express the inexpressible” and to act on the body’s basic functions. It is therefore not surprising that an increase in musical stimuli in biocontrol procedures has great potential as an approach to non-medication-based regulation of a person’s functional state. The approach in which musical or music-like stimuli are organized in strict correspondence with the characteristics of brain biopotentials has particular potential. In this situation, music individually adapted to the brain’s rhythm can act on pathologically altered oscillator patterns and induce neuroplastic rearrangements in the brain.</p> <p>It is found the effect of growth of N600 wave in long-latent auditory evoked potentials at increase of tonal distance in replaced musical fragment with respect to initial one.</p> <p>We explored two methods of musical EEG biocontrol in which the subject’s dominant spectral EEG components (EEG oscillators) were transformed into music-like signals with flute-like timbre. In some cases, the pitches and intensities of these sound signals varied smoothly depending directly on the ongoing EEG amplitudes of the EEG oscillators. In other cases, variation in the pitch and intensity of flute sounds were supplemented by another musical characteristic – rhythm. Single exposures were found to produce modifications to the bioelectrical activity of the subject’s brain, which were accompanied by improvements in the subjects’ psychophysiological status. Effects were particularly marked when the musicality of exposures were increased by adding the property of rhythmicity.</p> | |

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| Representative articles 2016-2017, quartiles | 1. <i>Gromov K.N., Radchenko G.S., Parin S.B., Korsakova-Kreyin M.N., Fedotchev A. I.</i> Influence of tonal modulation on spectral characteristics of human EEG. <i>Int. J. Psychophysiol.</i> 108 (S1), 88-88 (2016). | Q2, Q2, Q2, Q2, Q3 |
| | 2. <i>Fedotchev A.I., Bondar A.T., Bakhchina A.V., Parin S.B., Polevaya S.A., Radchenko G.S.</i> Effects of Musical Acoustic Signals Controlled by the Subject’s EEG Oscillators. <i>Neuroscience and Behavioral Physiology.</i> 47(1), 47–51 (2017). | – |
| Q-index (Qi) of the result | | 1.38 |

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| In collaboration | Institute of Cell Biophysics, Russian Academy of Sciences, Pushchino, Moscow District, Russia |
|------------------|---|



Auditory evoked potentials



Long-latent potentials

P600 growth for the greater tonal distances:
 without modulation – solid line;
 subdominant (1 tone replacement) – dotted line;
 small Sexta (4 tones replacement) – dashed line;
 three-tone (6 tones replacement) – dash-dot line.

