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The influence of Music Waves on Electric Activity of brain unconscious Critical Patients.

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There were studied 16 patients' electric encephalopathy's change by the influence of music in critical condition. From these patients 5 were women and 11 men, age from 28 till 89 years. In 8 cases critical condition was determined by ischemic insult, in 2 cases hemorrhagic insult, 2- acute trauma of skull brain, 2- acute respiratory failure caused from pneumonia; one case was provoked by H1N1 virus and flu and only one- from intoxication. From accompanying diseases we should notice heart failure in 10 patients, arterial hypertension-5, diabetes-2 and only one was on dialysis. As a complication, 13 patients had pneumonia. All patients were on artificial respiration, quality of coma by means of Glasgow scale was between 3-8 points. With APAHE 2 scale patients were been evaluated with 30 points that was 82.2% according to lethality. Providing with music happened from the first hours after entering in the clinic permanently during 24 hours by means of headphones attached to miniature recorder. Patients were been provided classical and folk songs. Research was conducted before providing with a music and after it.

Research was conducted by means of electric encephalopathy device field; there happened study of α , β , δ , θ waves' frequency and changes of amplitude. Music waves cause some changes of electric encephalopathy of unconscious patients and this fact sets an aim to use this method in order to treat critical patients in unconscious condition.

Key Words: Music, Treatment, Critical patients, Brain

Intraduccion: Usage of music in order to treat various disease has a long history but the role of music in treatment of critical patients is not studied yet if we do not consider several works. Moreover there is a question if unconscious patient's brain has a reaction on music tunes. Consequently it is interesting to study the influence of music waves on electric activity of brain. This is a purpose of our work.

Materials and methods: There were studied 16 patients' electric encephalopathy's change by the influence of music in critical condition. From these patients 5 were women and 11 men, age from 28 till 89 years. In 8 cases critical condition was determined by ischemic insult, in 2 cases hemorrhagic insult, 2- acute trauma of skull brain, 2- acute respiratory failure caused from pneumonia; one case was provoked by H1N1 virus and flu and only one- from intoxication. From accompanying diseases we should notice heart failure in 10 patients, arterial hypertension-5, diabetes-2 and only one was on dialysis. As a complication, 13 patients had pneumonia.

All patients were on artificial respiration, quality of coma by means of Glasgow scale was between 3-8 points. With APAHE 2 scale patients were been evaluated with 30 points that was 82.2% according to lethality.

Treatments were conducted according to standards and included artificial pulmonary ventilation, correction of change changing of water and electrolytes, enteral nutrition, antibacterial treatment and other activities.

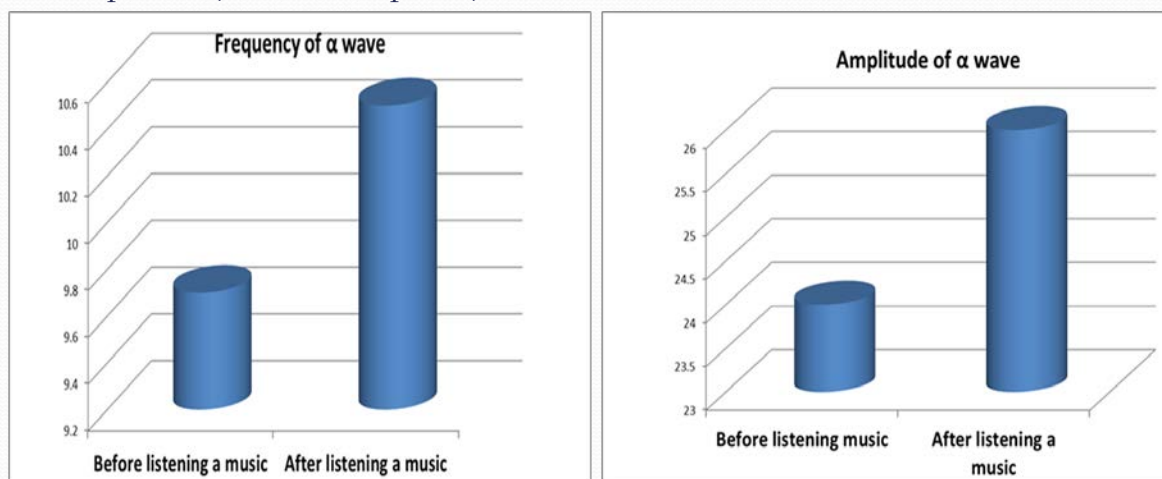
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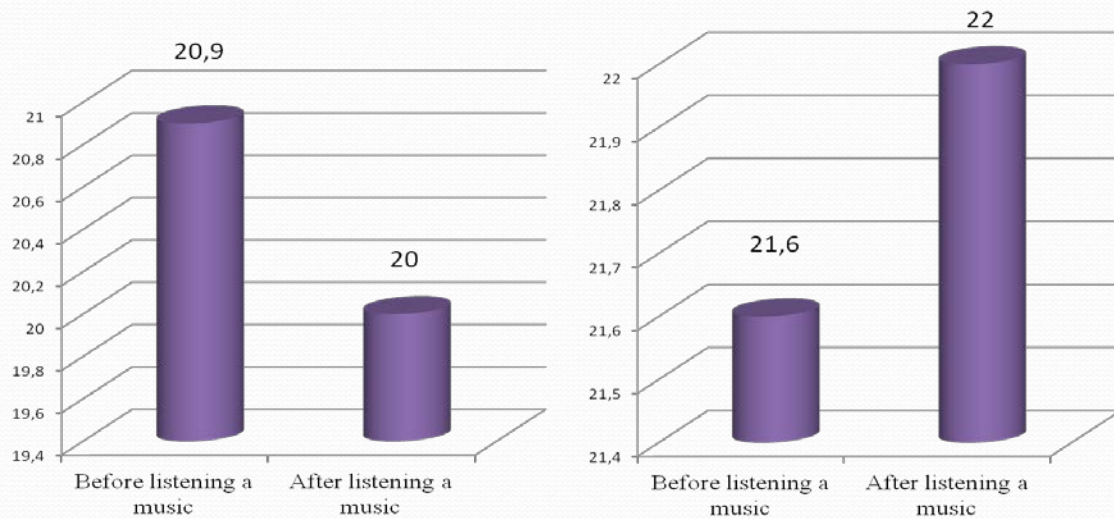
Results and discussion: Results were elaborated by means of variation statistics and was considered as trustworthy with likelihood of 95%.

results of the research are represented as diagrams. it is obvious that after providing a music in the left hemisphere of brain there is increased frequency (10.5 ± 0.01 Hr $P < 001$) of α wave and it is statistically reliable and amplitude (26.0 ± 0.7 Mvp < 001)

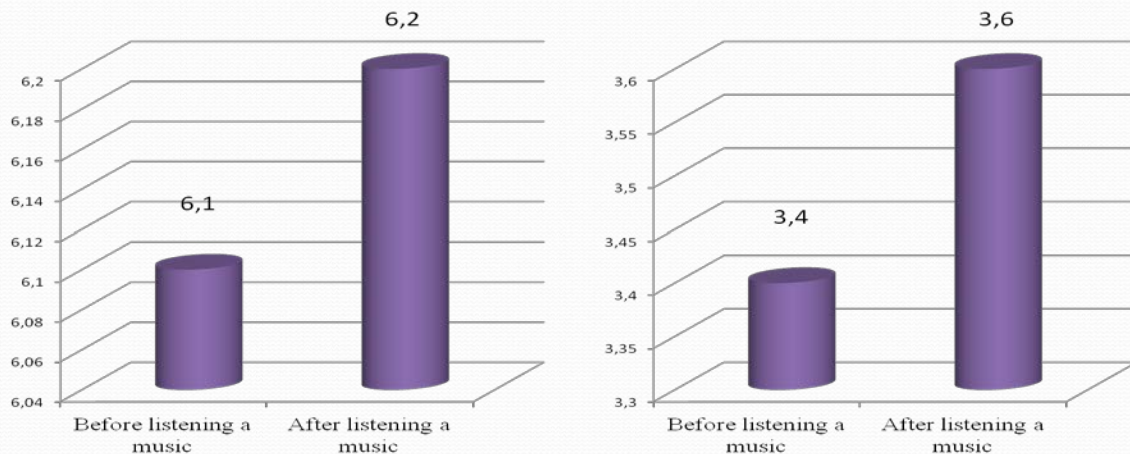
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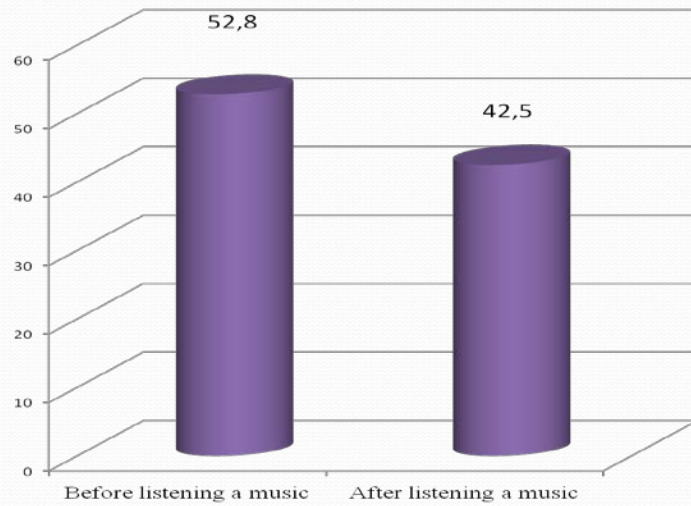
In the same hemisphere increase of β waves are not statistically trustworthy $P>005$ but the amplitude of the same wave was statistically amplified ($22.0 \pm 0.1\text{Mv}$ $P<001$)



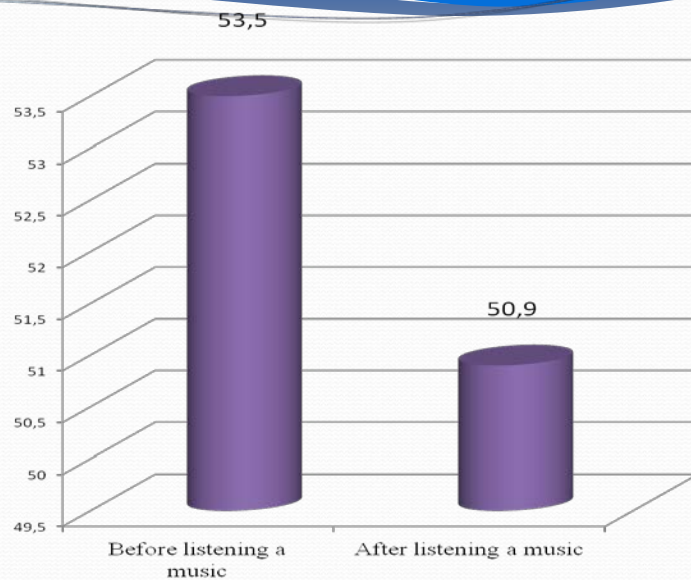
As for δ , θ waves' frequency in the left hemisphere of brain they were statistically increased ($6.2+0.01$ and $3.6 +0.01$ Hr $P <001$)



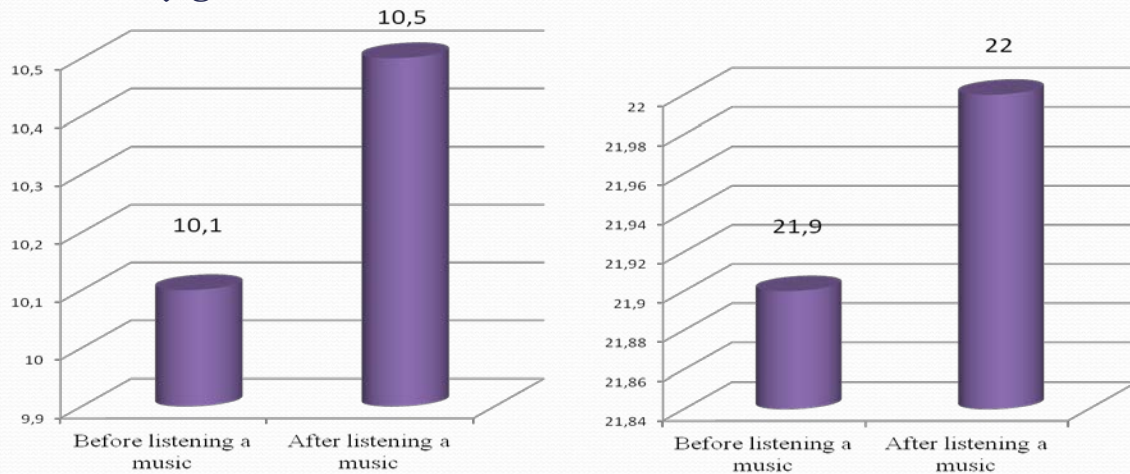
On these background in the same hemisphere after providing with a music θ wave's amplitude was reduced (42 ± 0.5 Mv $P < 001$)



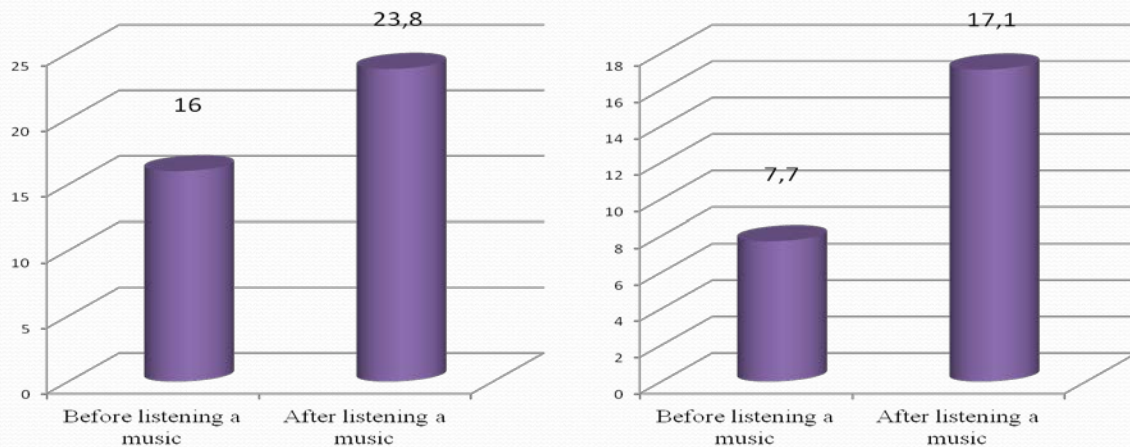
When δ amplitude's reduce was not statistically reliable (50.9 ± 1.1 Mv $P > 005$)



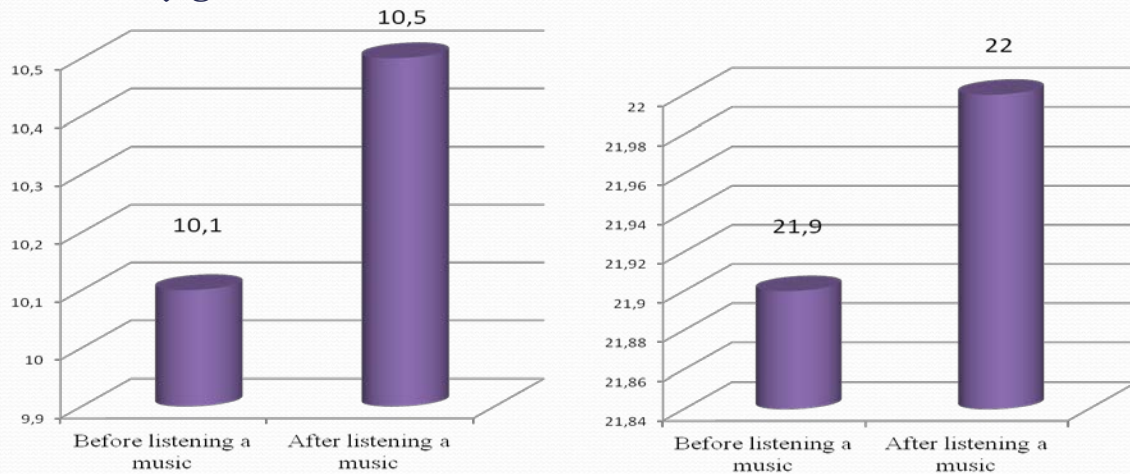
more or less similar changes occurred in the right hemisphere too; namely after providing with music α and β waves' rate was statistically grown (10.5 ± 0.1 and 22 ± 0.6 Hr $P < 001$).



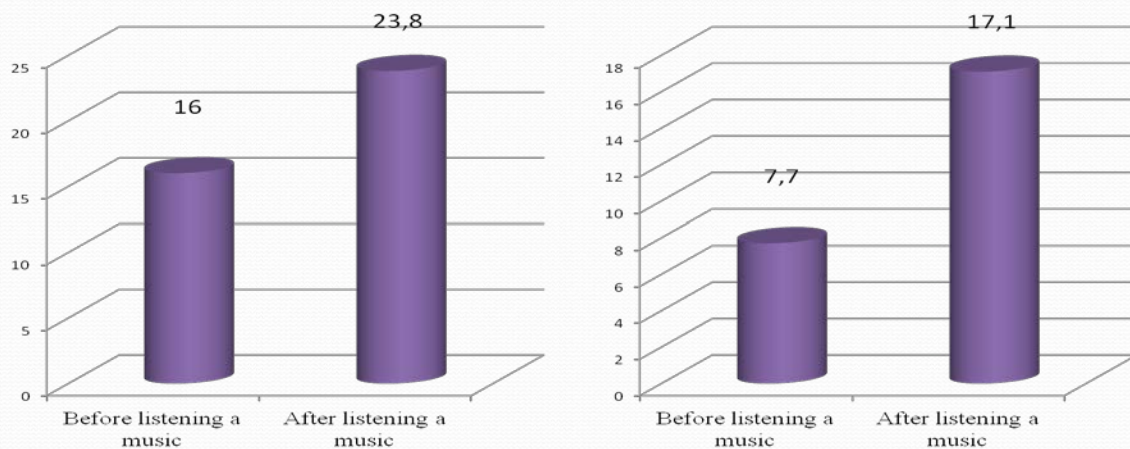
Amplitude of this waves also increased (23.8 ± 0.3 and 17.1 ± 0.2 Hr $P < 001$)



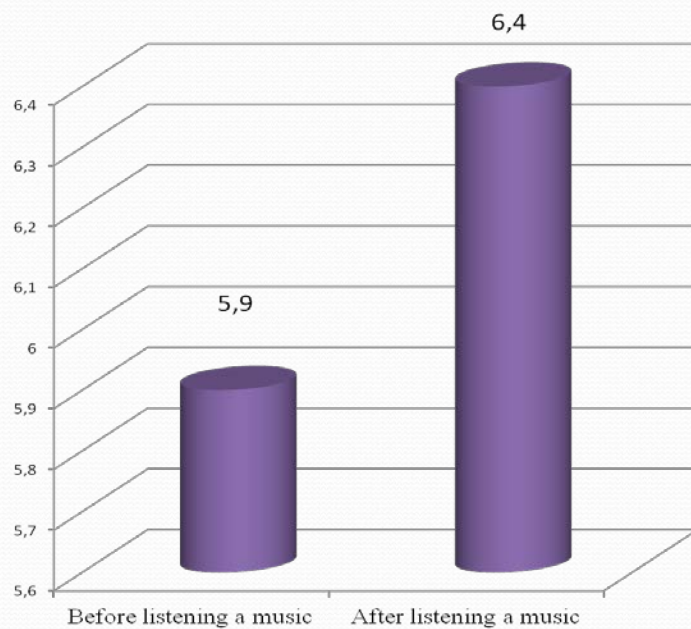
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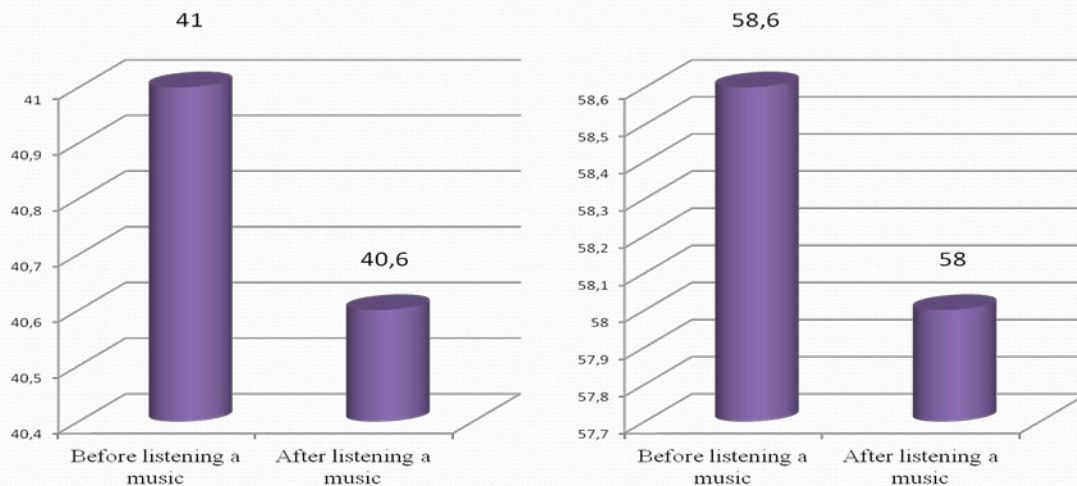
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What refers to change of δ and θ waves' rate, statistically trustworthy was θ wave's rate (6.4+001Hr P<001)



Amplitude of these waves were reduced after providing with music but it was statistically unreliable



Conclusion:

music waves cause some changes of electric encephalopathy of unconscious patients and this fact sets an aim to use this method in order to treat critical patients in unconscious condition.

ნ. ნიქაბაძე, ზ. ხელაძე, ზ. ხელაძე

მუსიკის ტალღების გავლენა უგონო მდგომარეობაში მყოფ კრიტიკულ ავადმყოფთა ელექტროენცეფალოგრაფიაზე (კრიტიკული მედიცინის ინსტიტუტი, თბილისი, საქართველო).

შესწავლილი იქნა კრიტიკულ მდგომარეობაში მყოფი 16 პაციენტის ელექტროენცეფალოგრაფიის ცვლილება მუსიკის ტალღების ზეგავლენით. კრიტიკული მდგომარეობა გამოწვეული იყო ინსულტით და სხვა მიზეზებით. ყველა პაციენტი იმყოფებოდა მართვით სუნთქვაზე, კომის ხარისხი გლაზგოს შკალით მერყეობდა 3 ქულიდან 8 ქულამდე. მკურნალობა ტარდებოდა სტანდარტის მიხედვით. მუსიკის მიწოდება ხდებოდა კლინიკაში შემოსვლის პირველივე საათიდან პერმანენტულად 24 საათის განმავლობაში მინიატურულ მაგნიტოფონთან მიერთებული ყურსასმენების მეშვეობით პაციენტებს მიეწოდებოდა სხვადასხვა სახის მუსიკა. კვლევა ტარდებოდა მუსიკის მიწოდებამდე და მის შემდეგ. ხდებოდა **α**, **β**, **δ**, **θ** ტალღების სიხშირის და ამპლიტუდის ცვლილების შესწავლა. შედეგები დამუშავებული იყო ვარიაციული სტატისტიკის მიხედვით. მუსიკის მიწოდების შემდეგ თავის ტვინის მარცხენა ჰემისფეროში სტატისტიკურად სარწმუნოდ მატულობდა **α** ტალღის სიხშირე და აპლიტუდა, ასევე სტატისტიკურად სარწმუნოდ იყო მოატებული **β** ტალღის ამპლიტუდა, აგრეთვე **δ** და **θ** ტალღების სიხშირე. ხოლო **θ** ტალღის ამპლიტუდა შემცირებული იყო, მეტ-ნაკლები მსგავსი ცვლილებები იყო მარჯვენა ჰემისფეროშიც, სახელდობრ: მუსიკის მიწოდების შემდეგ **α** და **β** ტალღების სიხშირე სტატისტიკურად სარწმუნოდ გაიზარდა ამ ტალღების ამპლიტუდამ ასევე მოიმატა, მარჯვენა ჰემისფეროში ასევე სტატისტიკურად სარწმუნოდ იყო **θ** ტალღის სიხშირის ზრდა. გამოტანილია დასკვნა, რომ მუსიკის ტალღები იწვევენ უგონო მდგომარეობაში მყოფი ავადმყოფების ელექტროენცეფალოგრაფიის ცვლილებებს. რაც სახავს გარკვეულ პერსპექტივას აღნიშნული მეთოდი გამოყენებულ იქნას კრიტიკულ ავადმყოფთა სამკურნალოდ.