

EFFECTS OF WAVES ON THE BRAIN

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Annotation. Since the last century, research in the field of neurobiology has been actively conducted. Scientists are studying the human brain, carrying out experiments on other animals. It has been scientifically proven that the brain is affected by flashes of light, sound, and electromagnetism. This makes it possible to influence it with the help of these waves. Analyzing experiments in the paper, it was found that scientists learned to control a person at a distance of more than 10 kilometers in the middle of the last century, now similar methods are used to create devices for controlling human brain activity for auxiliary purposes: treating diseases, mental disorders, increasing efficiency, improving emotional human condition. The benefits of modern technologies of this direction are characterized.

Keywords: sound waves, brain, electromagnetic waves, optogenetics, human mind control.

Introduction. The brain is one of the most complex systems in the world, the most important part of the human body. The principle of its operation is based on the processing, sending and receiving electrical impulses of various frequencies using neurons and neural connections.

Since the 20th century, many prominent psychologists have been interested in how the brain can be influenced from the outside. About 20 laboratories in the USSR developed various devices for controlling and creating artificial impulses perceived by the brain. During World War II, psychological weapons were being developed.

So, among other experiments, the “Ray of Death” installation was created by Japanese scientists, capable of jamming equipment at a distance of up to 10 kilometers with electromagnetic waves of a customizable frequency, and having a detrimental effect on living organisms, but the development was abandoned.

According to official data it is possible to conclude that the development of this type of impact continues. Sensitive microcircuits, chips, special LEDs - a variety of devices are developed in special scientific psychological laboratories. However, now the goal of such developments is to stimulate certain parts of the brain with special signals to help people.

Main part. Since 1956, the neuroscientist James Olds, in the course of experiments, has identified areas in mice in which current stimulation did not cause discomfort to the experimental subjects, but, on the contrary, gave pleasure. Scientists taught mice to press a button by themselves and stimulate the pleasure area in the brain. The experimental time could last up to 12 hours, and all this time the animal it constantly experienced the emotions of happiness.

In another experiment, researchers at James Olds kept rats hungry for four hours and then ran them through a T-maze that had food on one side and a lever that activated electrodes on the other. The test subjects ran to the lever anyway, because brain stimulation is directly more effective than eating food.

Now the method is sometimes used to treat severe forms of depression, when they can not be cured in any other way. Using this method, you can make animals radio-controlled: by placing three electrodes in the brain of a rat in the area with the right and left vibrissae and the pleasure center, you can train the rat to run in a certain direction. Researchers wanted to use such developments of trained rats even instead of people in hard-to-reach places: narrow tunnels or under the rubble of a house.

In the 21st century, a new promising method of influence has appeared - optogenetics. The essence of optogenetics is: scientists make certain changes to the mouse genome so that certain nerve cells can be activated or put to sleep by a flash of light. Then, the thinnest LEDs are introduced into the brain of such a mouse near the modified neurons. When the LEDs are activated, sensitive neurons

are activated, stimulating some area of the brain. Just such a wireless optogenetic apparatus is described in "Nature Neuroscience" by employees of Northwestern University.

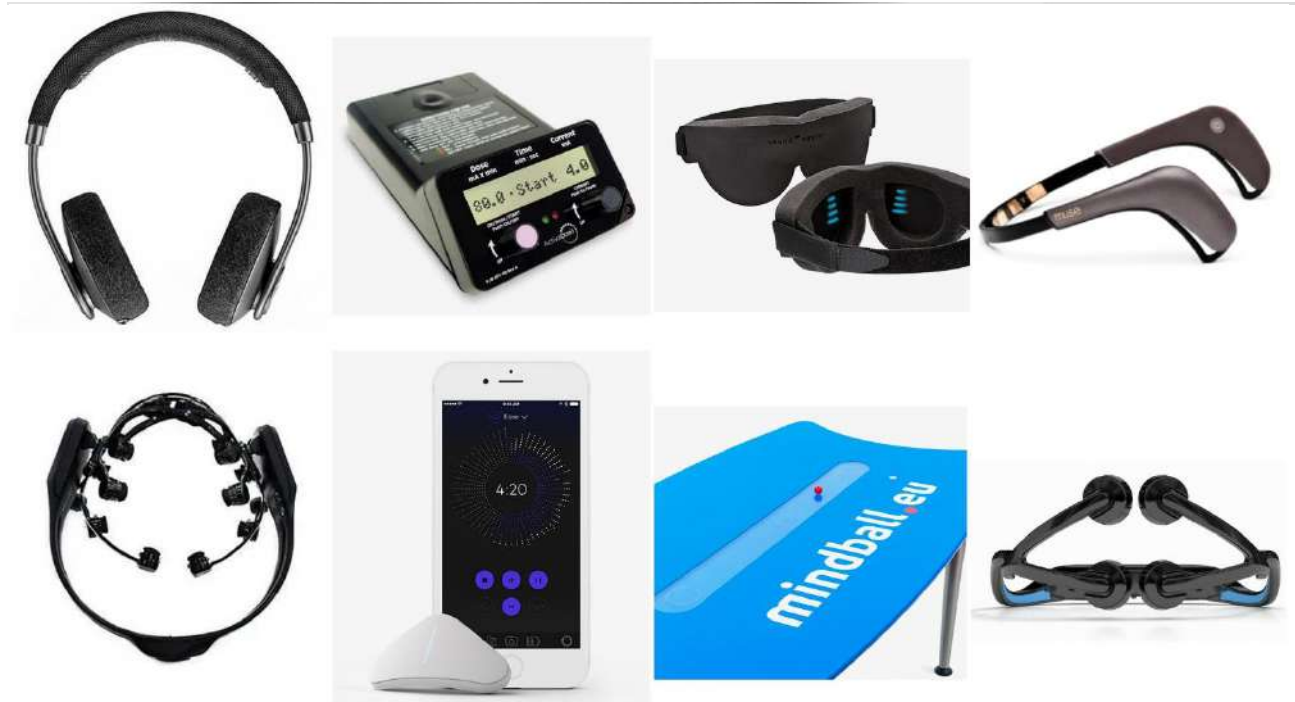
However, the brain can be influenced not only by electromagnetic or light waves, but also by sound. So one way is binaural beats.

Binaural beats are an auditory illusion that occurs when you listen to sound signals of two close frequencies, each of which is delivered to only one ear, and as a result you hear the third sound at a frequency that is the difference between the first two.

In fact, our brain is very influenced by music or sound, it happens subconsciously. In the mall, at home with headphones, in the office at work or at the parade, the brain picks up musical vibrations of a certain volume, tone, rhythm. During processing, various parts of the brain begin to work, the algorithms of our consciousness turn on, analyzing the information received and creating a response.

Using this method of influence, it is possible to achieve a change in the rhythm of the heart, breathing, mood (this effect is called the "Mirror Neural System", when we automatically recognize the mood of the interlocutor or the emotional message laid down by the composer and adjust to it, present the pictures associated with our personal life), movements (for example, dancing to the beat of music or shuddering from sharp transitions of the melody). It is also possible to increase the concentration of attention, acquire motivation, manage your inner state of mind.

Of course, such a vast trading field could not remain empty, so special gadgets (picture 1) are being actively developed to improve sleep, stimulate memory, treat depression, drug, tobacco and alcohol addictions, control brain activity, fatigue and etc. There is even a "Mindball Game" - a game for two with the main condition - you need to relax and roll the ball to the edge of the table with the power of thought.



Picture 1 - Special gadgets

However, opinions about the benefits and generally the presence of the effect are divided. Some scientists argue that modern devices have a negative effect on the brain, for example, in the treatment of addiction or schizophrenia, memory may deteriorate. Societies of people who oppose the global chipping of the population sound the alarm about such developments. People agree to voluntary brain chipping in order to be able to control it, but at the moment the issue of long-term consequences has not yet been fully studied. Some patients are simply subjected to the placebo effect.

Conclusion. The results of numerous studies and analysis made it is possible to draw several conclusions. Of course, many experiments have been useful, they have revealed a lot of new things about our brain, on the basis of which humanity can now create auxiliary gadgets, chips. Now it is really possible to control the animal remotely by sending commands from a regular phone. We can even simply turn on certain music, selected by special algorithms, bring certain information or installation there, receiving part of the control over consciousness. This is a great progress in the development of humanity.

However, not everything is so clear. Projects for the production of special devices for influencing the brain are not very popular in wide circles, such a business is quite expensive, it requires good specialists and interest in ensuring that every ordinary person can train himself to control himself. Still, the prospect of falling under someone else's will is not very pleasant for people. In the modern world around each of us, no matter how often we put our phone away, there are a huge number of sources of electromagnetic radiation that can affect us completely imperceptibly. Of course, there are some ways to protect against this type of radiation, for example, special shielding fabrics or building materials, devices for eliminating static electricity, creating safe areas, and etc. But even if you protect yourself from electromagnetic waves, there are at least light and sound waves, which are incredibly difficult to fully protect against, because we all cannot live in spacesuits. The data of some sources are reminiscent of the past serious tense. Half a century ago, special devices and machines for psychological mass impact were already created, for the humane purposes of improving the general mood of the inhabitants, of course. The old developments of government projects were carried out in different countries under the strictest control. After the collapse of the USSR, such studies were stopped on the territories of the Union republics, and the effect of some developments was not proven. Currently, there is another very strong type of influence on a person - the impact of waves of information.

We should be careful with the information that we receive from outside, learn to analyze, develop our own will and control over ourselves. The strength of the spirit can save you from being manipulated and thereby, perhaps even save someone's life.

References

- 1.Explained: Можно ли хакнуть мозг с помощью звука: [Electronic resource].– URL: <https://habr.com/ru/company/alconost/blog/501144/>
- 2.Explained: Исследователи выяснили, как повысить эффективность обучения при помощи нейробратной связи: [Electronic resource].– URL:<https://iq.hse.ru/news/207759860.html>
- 3.Explained: Биологические ловушки мозга Лекция Аси Казанцевой о знаменитых психологических экспериментах: [Electronic resource].– URL:<https://lenta.ru/articles/2015/02/12/psikh/>
- 4.Explained: Мыши на дистанционном управлении: [Electronic resource].– URL:<https://www.nkj.ru/news/41401/>
- 5.Explained: Управление мозгом с помощью лазера: [Electronic resource].– URL:<https://habr.com/ru/post/58859/>
- 6.Explained: Корейцы придумали незаметные мозговые имплантаты, позволяющие управлять мозгом через смартфон: [Electronic resource].– URL:<https://3dnews.ru/1031390/koreytsi-privdumali-nezametnie-mozgovie-implantati-pozvolyayushchie-upravlyat-mozgom-cherez-smartfon>
- 7.Explained: КАИСТ ИНФОРМАЦИОННЫЙ ЦЕНТР: [Electronic resource].– URL:https://news.kaist.ac.kr/newsen/html/news/?mode=V&mng_no=12111
- 8.Explained: Психотроника, управление сознанием: [Electronic resource].– URL:<https://litportal.ru/avtory/aleksandr-matancev-18494300/kniga-psihotronika-upravlenie-soznaniem-sravnienie-s-tehnolo-1235564.html>
- 9.Explained: 8 гаджетов, которые влияют на работу мозга: успокаивают, бодрят и делают умнее: [Electronic resource].– URL:<https://daily.afisha.ru/brain/4888-8-gadzhetov-kotorye-vliyayut-na-rabotu-mozga-uspokaivayut-bodryat-i-delayut-umnee/>
- 10.Explained: Эффективные средства защиты от электромагнитных полей. Сохраните здоровье своих детей!: [Electronic resource].– URL:<https://simvolt.uu/ru/efektivni-zasobi-zakhistu-vid-elektromagnitnikh-poliv.-zberezhit-zdorovya-svoyikh-ditey/>
- 11.Explained: Ритмы Бергера: [Electronic resource].– URL:<https://academic.oup.com/brain/article/133/1/3/314887>
- 12.Explained: Ритмы головного мозга: [Electronic resource].– URL:https://ru.wikipedia.org/wiki/%D0%A0%D0%B8%D1%82%D0%BC%D1%8B_%D0%B3%D0%BE%D0%BB%D0%BE%D0%B2%D0%BD%D0%BE%D0%B3%D0%BE_%D0%BC%D0%BE%D0%B7%D0%B3%D0%B0
- 13.Explained: Фотостимуляция: [Electronic resource].– URL:<https://zrenie.dp.ua/services/fotostimuliaciia>
- 14.Explained: Как музыка воздействует на мозг? Условные рефлексy, нейрофизиология звука и эмоциональное заражение: [Electronic resource].– URL:<https://discours.io/articles/theory/music-and-brain>
- 15.Explained: Работает ли музыка для мозгов и бинауральные ритмы?: [Electronic resource].– URL:<https://youtu.be/Tegkz1V1dUA>