

Enhancement of Work Efficiency in an Organization by Applying Ergonomics & Sound Waves Sessions

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Abstract: The majority of organizations are competing to survive in this volatile and fierce market environment. Motivation and performance of the employees with ergonomics are essential tools for the success of any organization in the long run. On the one hand, measuring performance is critical to organizations.

Management of the employees and behavior study as it highlights the evolution and achievement of the organization. On the other hand, there is a positive relationship between employee management and organizational effectiveness, reflected in numerous studies. This paper aims to analyze the drivers of employee brain enhancement & human comfort by applying ergonomics to high levels of organizational performance by the help of vibrational analysis of brain & Ergonomics techniques. The literature shows that factors such as empowerment and recognition increase employee brain potential and help to improve efficiency in work place.

If the empowerment and recognition of employees is increased, their efficiency to work will also improve, as well as their accomplishments and the organizational performance. Nevertheless, employee dissatisfactions caused by monotonous jobs and pressure from clients, might weaken the organizational performance. Therefore, jobs absenteeism rates may increase and employees might leave the organization to joint competitors that offer better work conditions and higher incentives. Not all individuals are the same, so each one should be motivated using different strategies. For example, one employee may be motivated by higher commission, while another might be motivated by job satisfaction or a better work environment.

Keywords: Brain enhancement, Vibration analysis, Ergonomics techniques, industrial engineering and working environment.

Introduction

All organizations want to be successful, even in current environment which is highly competitive. Therefore, companies irrespective of market strive to retain the best employees, acknowledging their important role and influence on organizational effectiveness. In order to overcome these challenges, companies should create a strong and positive relationship with its employees and direct them towards task fulfillment. In order to achieve their goals and objectives, organizations develop strategies to compete in highly competitive markets and to increase their performance. Nevertheless, just a few organizations consider the human capital as being their main asset, capable of leading them to success or if not managed properly, to decline. If the employees are not satisfied with their jobs and not motivated to fulfill their tasks and achieve their goals, the organization cannot attain success.

The main two themes to increase efficiency in any industry or workplace are following:

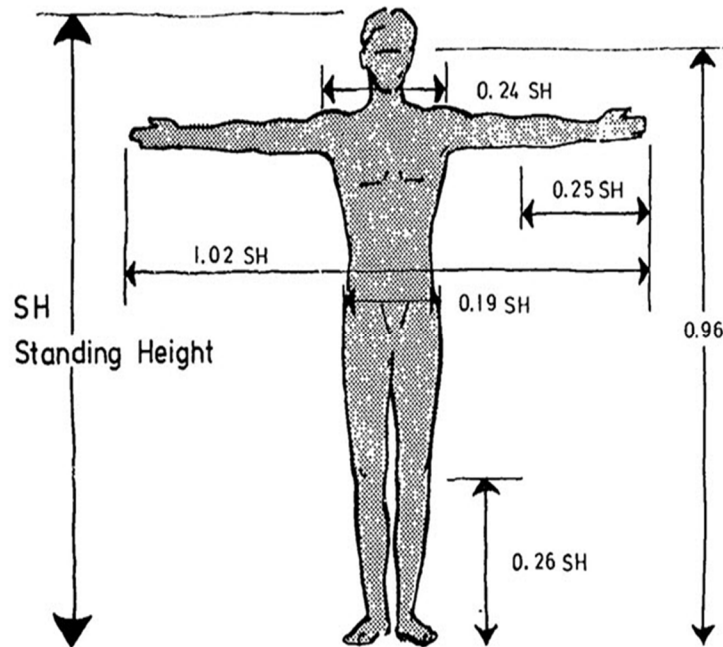
- 1) To improve the workplace environment by applying ergonomics techniques for employee comfort.
- 2) By applying Vibration & Sound Waves Sessions for enhancement potential of employees for betterment of work & Surroundings.

What Is Ergonomics?

The term "ergonomics" is derived from two Greek words: "ergon," meaning work, and "nomos," meaning natural laws. Ergonomists study human capabilities in relationship to work demands.

"Ergonomics is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.

The terms 'ergonomics' and 'human factors' can be used interchangeably, although 'ergonomics' is often used in relation to the physical aspects of the environment, such as workstations and control panels, while 'human factors' is often used in relation to wider system in which people work. On this site we generally use the term that fits most closely with the research or the industry that we are discussing.



Why Is Ergonomics Important?

In the workplace: According to Safe Work Australia, the total economic cost of work-related injuries and illnesses is estimated to be \$60 billion dollars. Recent research has shown that lower back pain is the world's most common work-related disability – affecting employees from offices, building sites and in the highest risk category, agriculture.

Ergonomics aims to create safe, comfortable and productive workspaces by bringing human abilities and limitations into the design of a workspace, including the individual's body size, strength, skill, speed, sensory abilities (vision, hearing), and even attitudes.

What Is Vibration In Motivation?

This beautiful world is full of vibrations. We can feel it anytime. Right now how you are feeling, mostly depend on the kind of vibration around you. Most of the powerful vibrations come from human being. Each of our thoughts, each of our feeling create vibrations.

Depending on the quality of thought, there can be positive vibration or negative vibration. We feel happy or sad in each other company depending upon what kind of vibration one has. That is why with some people we always feel happy, even if they are not so close to us. While we don't found our self enjoying in company of someone who is even closest to us. It is all because of their (negative) vibrations.

What Is The Role Of Sound Waves In Motivation?

The biological effects of electromagnetic waves are widely studied due to their harmful effects, such as radiation-induced cancer, and to their application in diagnosis and therapy. However, the scientific community has considerably disregarded the biological effects of sound, another physical agent to which we are frequently exposed.

Sound wave has proven time and again to be an important component of human culture. From its ceremonial origin to modern medical usage for personal motivation, concentration, and shifting mood, music is a powerful balm for the human soul. Though traditional "music therapy" encompasses a specific set of practices, the broader use of music as a therapeutic tool can be seen nowadays as doctors are found recommending music for a wide variety of conditions

1) Use music with no words. As soon as you add words, you activate language centers in your brain, which interferes with any other language "tasks" you may need to work on (reading, writing, talking, etc.). Listen to music that doesn't include words...at least words you can understand. Enya uses words, but because of how she sings them, you can't understand what she's saying.

2) Silence is a kind of music. I say that music is made up of two things: sounds and silences. Silence can be just as effective as music. It may be that listening to music interferes with your ability to focus. If that's the case, try working in silence. But if music is too much, and silence too little, try a white noise machine or listen to nature-type sounds.

3) Try different speeds, or tempos, of music. There are some people who claim that music at certain tempos influence certain types of brain waves (e.g. alpha, theta, etc.). Me...I'm not so sure. But I do think tempo makes a difference. Generally

speaking, faster music helps us feel more energized and heightens our awareness. Slower music helps us feel more calm and relaxed. If you work better in a more energized state, have music playing that's faster and more energetic. However, if you prefer a Zen-like relaxed calm when you work, listen to music that's on the slower side

Literature review

For ergonomics

Baba MdDeros et al.,[1] studied that assembly workstation at Company a need to be redesign to eliminate awkward postures and anthropometric mismatches to lower MSDs problem and improve productivity among assembly workers.

Ravikumar Kamble et al.,[2] studied the cycle time and existing method of different work stations and suggesting improved method for the same so as to reduce the cycle time and to improve productivity. The importance of the work study is directly related to the reduction of the inefficient time and increasing the productivity. He also Suggested a proper sequence of operations which reduces the cycle time of the work stations.

Sandip B. Wanave et al., [3] evaluated the workstation to improve the productivity by reducing the back pain, shoulder injury, fatigue etc. Productivity is an important indicator of economic growth and social health. High performance and productivity require the right sitting posture. So for considering this factor operator needs proper seating arrangement such that their problems regarding the MSDs. It is revealed that the suggested workstation improved working posture and results in reduced postural stress on operators' bodies and consequently reduced prevalence of MSDs symptoms. Analysis and implementation of ergonomic chair give a great difference in the readings taken for different factors. Capability and concentration of workers increases due to less fatigue observed.

For Sound Waves

The most highly publicized mental influence of music is the "Mozart effect." Struck by the observation that many musicians have unusual mathematical ability, researchers at the University of California, Irvine, investigated how listening to music affects cognitive function in general, and spatial-temporal reasoning in particular. In their first study, they administered standard IQ test questions to three groups of college students, comparing those who had spent 10 minutes listening to a Mozart piano sonata with a group that had been listening to a relaxation tape and one that had been waiting in silence. Mozart was the winner, consistently boosting test scores. Next, the investigators checked to see if the effect was specific to classical music or if any form of music would enhance mental performance. They compared Mozart's music with repetitive music by Philip Glass; again, Mozart seemed to help, improving spatial reasoning as measured by complex paper cutting and folding tasks and improving short-term memory as measured by a 16-item test. How might music enhance cognitive performance? It's not clear, but the researchers speculated that listening to music helps organize the firing of nerve cells in the right half of the cerebral cortex, the part of the brain responsible for higher functions. According to this construct, music—or at least some forms of music—acts as an "exercise" that warms up selected brain cells, allowing them to process information more efficiently. It's an interesting theory, but before you rush out to stock up on recordings of Mozart's music, you should know that even in the original research, the "Mozart effect" was modest (8 to 9 IQ points) and temporary (15 minutes). And in reviewing 16 studies of Mozart's music and human cognitive function, a Harvard psychologist concluded that the effect was even smaller, amounting to no more than 2.1 IQ points. It's a sour note, but it's hardly a requiem for the theory that music may boost cognitive function. In fact, the divergent results should serve as a prelude to additional research. And even if listening to music turns out to have little long-term effect on cognition, a 2010 review reported that learning to play an instrument may enhance the brain's ability to master tasks involving language skills, memory, and attention.

On applying Ergonomics

Case study 1

Eddie works on an engine assembly line. He uses a handheld impact wrench to fit a component to an engine. The assembly line makes up to 2400 engines a day and it takes approximately 3 seconds to tighten each component.

As well as the risk from using a vibrating tool, Eddie often had to adopt poor postures to reach some parts of the engine. He had to repeatedly stretch out his arm and constrain his posture while tightening the adapter. After a few weeks Eddie found that he was leaving work with shoulder and neck pain. One tea break, Eddie's line manager saw him rubbing his neck and shoulder and recognised that the pain could be due to the type of work Eddie was doing. The line manager spoke with Eddie and then told the company health and safety officer about what she had seen.

The company assessed the work by considering ergonomics principles and, after getting ideas from the workforce, came up with the following modifications:

- that little shock was transmitted to the hand. They also suspended the They replaced the impact wrench with one with minimal reaction force so wrench so Eddie didn't have to support its weight.
- sides of the engine, avoiding the need to adopt poor working postures. They modified the workplace layout so workers had better access to all

- were moved around a number of different tasks. They implemented a job rotation scheme so the five workers on the line. Some of these tasks still required the use of vibrating tools, but the overall personal exposure was halved. As a result of the modifications there was:
- no need to adopt poor and constrained postures; a reduction in vibration exposure;
- reduced boredom and fatigue for Eddie's team; ■ improved productivity.

Case study 2

Julie is a receptionist at a bank. Much of her work involves using a telephone to take messages and redirect calls to other departments. Julie regularly uses a computer to make appointments, record messages and respond to emails.

After working at reception for eight months, Julie found she was leaving work with an aching shoulder and neck, and with sore eyes and a headache. Julie talked about the problems with her manager, who decided to review how computers were used in reception.

Her manager carried out a DSE assessment, and also looked at the work Julie was doing at reception.

- read because of glare and reflections from light through the window. This The DSE assessment identified that Julie's computer screen was difficult to meant that she would repeatedly adjust her posture to view the screen.

- telephone between her shoulder and ear while talking on the phone and In addition, her manager also identified that Julie would often hold the typing a message on the computer. She regularly adopted this awkward posture during her working day.

The assessment led to the introduction of simple, cost-effective measures to reduce the risks:

- screen no longer faced the window, to remove the glare. With the help of her manager, Julie rearranged her workstation so that the

- A hands-free telephone headset was provided, which helped eliminate Julie's ■ An eye test to establish if Julie had any problems with her vision.

neck and shoulder problems.

As a result, Julie's health problems diminished, and her productivity increased

Research on the topic

According to the scientists' reviews, man only incorporates less than 10% of his brain capacity. This shows how awesome a human can be, if it's utilized more. Although man only uses less than 10% of his brain's ability, we can witness the created human cultures that are really extraordinary.

Man has as many as 1 trillion of brain cells. Compare with a bee which has only 7000 cells. With only 7000 brain cells, a bee is able to do incredible things such as establishing a very high precision house of honey, hexagonal in shape, where they can store maximum amount of honey with minimum materials. Many of our mathematicians are astonished by the bees' capability. And, do you know that since old time, bees always produce 10 times compared to what they need for themselves, and the only reason is to let man take advantages of the honey.

So, if we compare with a bee which has only 7000 brain cells, a man with 1 trillion brain cells shall accordingly be able to develop his brain's capability more awesome. Do you know that 1 brain cell of a man has a power capable to beat any most sophisticated computer?!

Human brain consists of right brain and left brain, and they will function optimally if the left and right brains are in equilibrium. But this is a rare condition because most people develop and become mature while dominantly using their left brain.

Man has physical body and soul. What distinguish between living human and the dead one is the soul (energy) existing in his/her body. As long as the energy is there, the man will still be alive. Similarly, human brain, it doesn't only has physical body but also energy (wave). This wave is called a brainwave.

Brainwave was initially found by Hans Berger, a nerve scientist from Germany. Hans is the founder of brain wave meter called EEG (Electroencephalography). This device was officially introduced to public in 1924. The work procedure of EEG is to measure the waves coming out repetitively between two electrodes mounted on one's head. Through times, EEG was also used to diagnose brain diseases, such as epilepsy, tumor and other brain damages.

We are using at most 5% of the potential of human brain mind - Dr. John Ageing Ph.D. A.B M.A

From centuries our Rishis & Munies have harnessed the power of Brain to achieve the extraordinary self-control, thinking ability etc. Now again the age old wisdom is available at our disposal which we can pass it on to the younger generation.

Brain Development Program is a scientific & proven technique which has been well researched for optimizing the function of our middle brain(mesencephalon), which is the 'bridge' between the left and the right brain.

Having this 'bridge' activated allows for the retrieval of information between the left and the right brain, which leads to more efficiency in learning and absorbing information.

Few of the benefits of Brain Development Program are as under:

- Memory & Concentration
- Creativity

- IQ & Thinking Ability
- Self-confidence
- Performance in sports & in academics
- Performance in art work

Scientific research has shown us that we have more personal control over the behavior of our brains than we ever thought possible. We can change attitudes, beliefs, emotional states, and behavior; all by harnessing the power of Brain Wave

For scholastic performance, social skills, attention deficit or hyperactivity; analysis of Brain Waves can help you fully develop and achieve their best.

BWA (Brain Wave Analysis) addresses the foundations of learning; a balanced and organized brain can process and remember the information more easily. Improved mental performance and ability to pay attention equals better learning; reducing stress develops better test results, and calming emotional and behavioral issues improves social interactions. All this equals better prospects for the future.

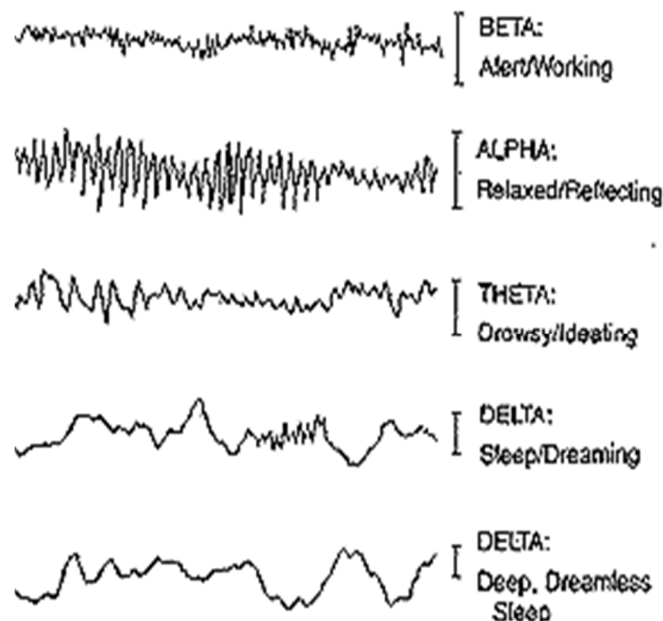
Categories of Brain Waves

- DELTA WAVES (.5 TO 3 HZ)
- THETA WAVES (3 TO 8 HZ)
- ALPHA WAVES (8 TO 12 HZ)
- BETA WAVES (12 TO 38 HZ)
- GAMMA WAVES (38 TO 42 HZ)

What is the function of the various brainwaves?

It is well known that the brain is an electrochemical organ; researchers have speculated that a fully functioning brain can generate as much as 10 watts of electrical power. Other more conservative investigators calculate that if all 10 billion interconnected nerve cells discharged at one time that a single electrode placed on the human scalp would record something like five millionths to 50 millionths of a volt. If you had enough scalps hooked up you might be able to light a flashlight bulb. Even though this electrical power is very limited, it does occur in very specific ways that are characteristic of the human brain. Electrical activity emanating from the brain is displayed in the form of brainwaves. There are four categories of these brainwaves, ranging from the most activity to the least activity. When the brain is aroused and actively engaged in mental activities, it generates beta waves. These beta waves are of relatively low amplitude, and are the fastest of the four different brainwaves. The frequency of beta waves ranges from 15 to 40 cycles a second. Beta waves are characteristics of a strongly engaged mind. A person in active conversation would be in beta. A debater would be in high beta. A person making a speech, or a teacher, or a talk show host would all be in beta when they are engaged in their work.

The Brainwaves



The next brainwave category in order of frequency is alpha. Where beta represented arousal, alpha represents non-arousal. Alpha brainwaves are slower and higher in amplitude. Their frequency ranges from 9 to 14 cycles per second. A person who has completed a task and sits down to rest is often in an alpha state. A person who takes time out to reflect or meditate is usually in an alpha state. A person who takes a break from a conference and walks in the garden is often in an alpha state.

The next state, theta brainwaves, is typically of even greater amplitude and slower frequency. This frequency range is normally between 5 and 8 cycles a second. A person who has taken time off from a task and begins to daydream is often in a theta brainwave state. A person who is driving on a freeway, and discovers that they can't recall the last five miles, is often in a theta state--induced by the process of freeway driving. The repetitious nature of that form of driving compared to a country road would differentiate a theta state and a beta state in order to perform the driving task safely.

Individuals who do a lot of freeway driving often get good ideas during those periods when they are in theta. Individuals who run outdoors often are in the state of mental relaxation that is slower than alpha and when in theta, they are prone to a flow of ideas. This can also occur in the shower or tub or even while shaving or brushing your hair. It is a state where tasks become so automatic that you can mentally disengage from them. The ideation that can take place during the theta state is often free flow and occurs without censorship or guilt. It is typically a very positive mental state.

The final brainwave state is delta. Here the brainwaves are of the greatest amplitude and slowest frequency. They typically center around a range of 1.5 to 4 cycles per second. They never go down to zero because that would mean that you were brain dead. But, deep dreamless sleep would take you down to the lowest frequency. Typically, 2 to 3 cycles a second.

When we go to bed and read for a few minutes before attempting sleep, we are likely to be in low beta. When we put the book down, turn off the lights and close our eyes, our brainwaves will descend from beta, to alpha, to theta and finally, when we fall asleep, to delta.

It is a well-known fact that humans dream in 90 minute cycles. When the delta brainwave frequencies increase into the frequency of theta brainwaves, active dreaming takes place and often becomes more experiential to the person. Typically, when this occurs there is rapid eye movement, which is characteristic of active dreaming. This is called REM, and is a well-known phenomenon.

In summary, there are four brainwave states that range from the high amplitude, low frequency delta to the low amplitude, high frequency beta. These brainwave states range from deep dreamless sleep to high arousal. The same four brainwave states are common to the human species. Men, women and children of all ages experience the same characteristic brainwaves. They are consistent across cultures and country boundaries.

Here we use the Vibrations or Brain waves to accelerate the functions of Neurons and therefore influences other neural connections like learning, grasping, memory and every activities of the body that we do in our daily routine.

The description of waves or vibration affect to our brain is:

Gamma Wave: Inspiration ! Higher Learning ! Focus

Gamma waves are the fastest of the brainwave frequencies and signify the highest state of focus possible. They are associated with peak concentration and the brain's optimal frequency for cognitive functioning. Nobel Prize winning scientist, Sir Francis Crick believes that the 40Hz frequency may be the key to the act of cognition. 40 Hz is the window frequency used in all Brain Sync Gamma and Beta wave programs. Review all gamma wave programs now.

Beta Waves: Alertness! Concentration ! Cognition

Beta waves range between 13-40 HZ you are wide-awake, alert. Your mind is sharp, focused. It makes connections quickly, easily, and you're primed to do work that requires your full attention. In the Beta state, neurons fire abundantly, in rapid succession, helping you achieve peak performance. New ideas and solutions to problems flash like lightning into your mind. Review all beta wave programs.

Alpha Waves: Relaxation ! Visualization ! Creativity

The Alpha state is an intensely pleasurable and relaxed state of consciousness essential to stress reduction and high levels of creativity. Artists, musicians and athletes are prolific alpha producers; so are intuitive persons, and so was Albert Einstein. Alpha researcher, Joe Kaiya says, "Its pleasure may come from the fact that alpha "represents something like letting go of anxieties." With Brainwave Therapy binaural beat frequencies you can begin experiencing the benefits of alpha Biofeedback training right now. - Try a free alpha wave meditation now! or Review all alpha wave programs now.

Theta Waves: Meditation ! Intuition ! Memory

Theta is one of the more elusive and extraordinary brain states you can explore. It is also known as the twilight state which you normally only experience fleetingly upon waking, or drifting off to sleep. Theta is the brain state where magic happens in the crucible of your own neurological activity. But for most, being able to enter the dreamlike theta state without falling asleep takes meditation practice. Luckily, Brainwave Therapy can speed up this process, making it easier to drop into deep meditative states, even if you've never meditated before.- Try a free Theta Wave meditation now or Review all theta wave programs now.

Delta Waves: Healing ! Sleep ! Detached Awareness

In the Delta state you are sound asleep. Delta waves are the slowest of all five brainwave frequencies and range between 0-4 Hz. Slow Wave Sleep or SWS, is the deepest of sleep states and it plays a vital role in health and wellbeing. During this

phase of the sleep cycle, the brain begins producing very slow, large Delta waves. Even if your lifestyle doesn't allow for the luxury of a full eight hours of sleep, a few hours of Delta waves will trick your brain into thinking it's had the entire restorative sleep it needs.

Archimedes himself invented a physical theory while he was relaxing himself, that is, when he immersed his body into the bath tub, where then the "AHA Phenomenon" rose automatically. Even Einstein normally played a violin first to let his brain relax and thus able to invent new inventions in the field of Physics. So, it's clear now, relaxed condition will take our brain toward alpha-theta waves where our brain's performance will be very maximum. This is what we called entering a genius condition.

Method of Brain Enhancement using Sound Waves

Brain enhancement method is actually NOT THE NEW METHOD. This enhancement method applies the methods already since long developed among the people. The secret is that you just collaborate or combine many of the said methods and then implement.

Followings are the methods used in brain enhancement, and I am sure that many of you are familiar with them:

Brain gym

These gyms are already proven and acknowledged scientifically to be useful for balancing left / right brains. To make the intuition active, it absolutely needs a balance between the left and right brains, and this is achieved through brain gym and eyeball gym.

Motivation

Its function is to make the participant have spirit, able to destroy "mental blocks" such as low self-confidence, lazy, scared, and so on.

Visual Technology

Here we show entertaining films, in order to make them happy (have fun) so that their brains turn fresh. Show them also the touching and inspiring films. The purpose is to let them have empathy to others and to teach them to be grateful for all what God has given us. This visual teaching method is easier to adapt by a brain.

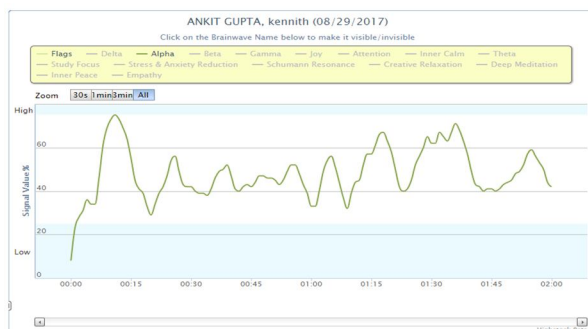
Sound Waves

It functions to stimulate the brain to be more concentrated, more focused, quiet and create intuition. Scientifically, relaxing music such as classic is proven to have very good impacts against our brain. Nowadays, even the fetus is supposed to listen to classic music to calm it down. They are actually very effective in listening to this kind of music. Scientific researches on the impacts of music against the brain have of course been published, even a Japanese scientist, Masaru Emoto has proven that if water is listening certain music, it will react in compliance with the kind of music, as to prove that relaxation music will create good water crystal.

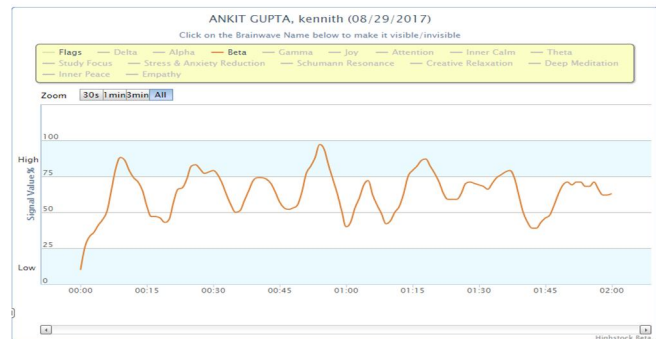
After these processes we have some test results of the group to prove our methodology is right. And there is a enhancement in their potential of brain.

Results

Before

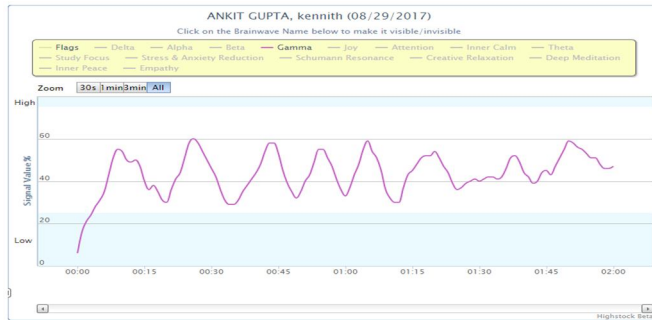


Alpha Wave

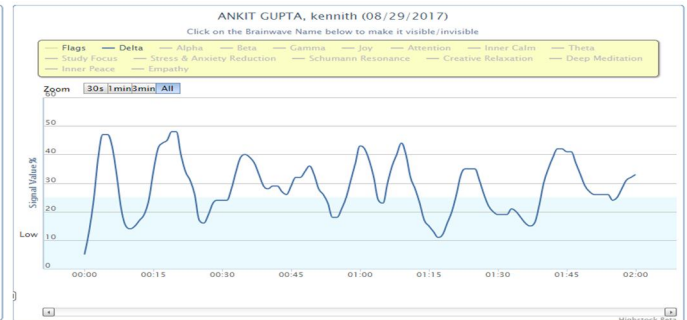


Beta Wave

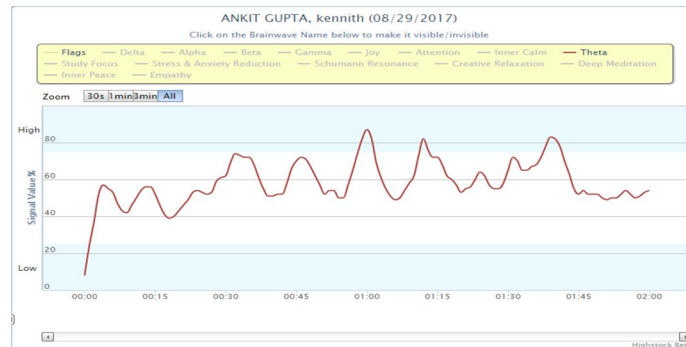
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Gamma Wave

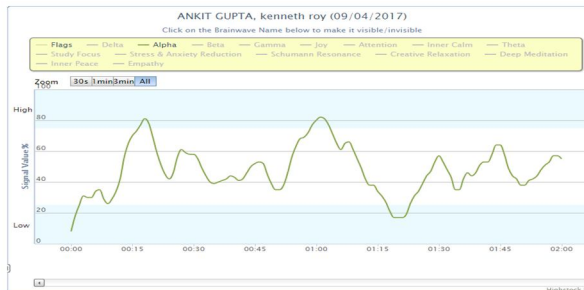


Delta Wave

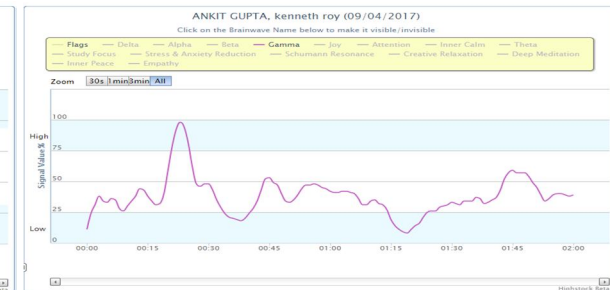


Theta Wave

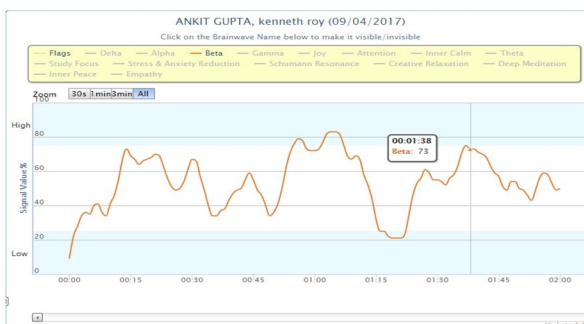
After



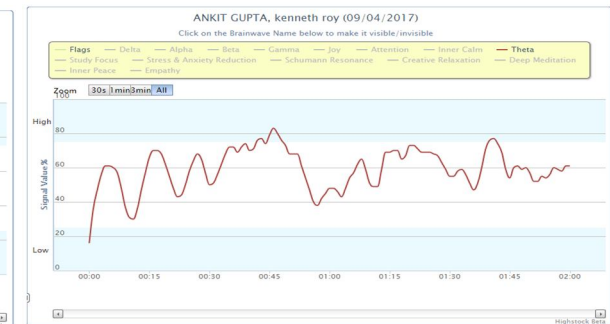
Alpha Wave



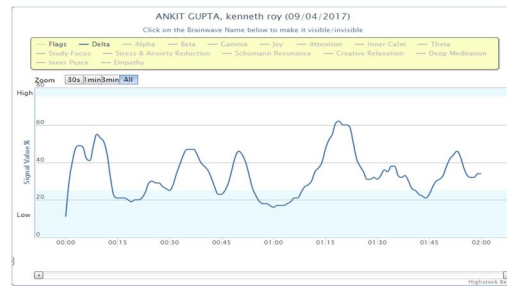
Gammawave



Betawave



Theta Wave



Delta Wave

Conclusion

In the result we see that after session or before session there is a difference in the reading of brain waves taken through advanced EEG machine.

In result we find out Before the Alpha waves is of low amplitude while after the amplitude get high, same we see with Theta wave, before the amplitude get high but after the session the amplitude get so.

And also we take feedback from the persons who are taking sessions, what you feel the difference in before and after .The replies we get there is an enhancement in their calmness, intuition for doing things, mind thinking get broad, capable of taking work load, the aggression get reduced and will be able to do things in a positive way certainly.

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