

MUSIC AND MEDICINE

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Abstract. *Music and medicine, apparently two far-off fields, have been, in reality, ever since the days of yore, in close connection. It existed not only during the remote epoch of magic – when the healer and the musician were blended within a unique person, and the magic charm was never-failing in medical practice – but also along the entire ascending path that both music and medicine have gone over. Music therapy has been practiced in Western countries for more than 200 years and has encountered during the last decades a prodigious development and an anchoring among scientific disciplines. Music therapy also addresses those who are not clinically ill, those who undergo therapy to the purpose of analyzing their resources, of better knowing themselves and of improving their health and life. Other areas of interest touched by music therapy are found in personal interactions and, as a consequence, in solving social relationing issues.*

Keywords: *sound, vibration, music, therapy, medicine.*

1. COMPREHENDING THE THERAPEUTIC ASPECT OF MUSIC

There is no treaty or approach in the field failing to asseverate that, ever since the beginning, the effects of music upon the organism and upon the spirit are beneficial. As a matter of fact, for the human being of primordial cultures, music and medicine were important components of his life, both serving his intention to „solve” his life and to transcend the immediate. Exerting a certain form of ritualistic external expression of the type of magic, incantation and ecstasy, to whose support music and medicine stepped in, was done in the shadow of a mystery exceeding the antique man’s power of comprehension. In elucidating the mystery, he, the primordial human being, knew how to genially use certain means of introspection, which, unless meant to unveil it, could at least provide the possibility of contacting it, as well as confer hope for a possible pacification with the unknown, as the ancient man, concerning what could not be explained, in relation to his life, his health, placed it in the charge of malevolent forces, of some deities deemed the origin of their punishment and diseases.

What was once looked upon from unilateral, immediate standpoint is now an argument in supporting the bipolarity music-medicine, entity whose properties define and amplify its curative function. Music and medicine may be deemed two communication vessels, as medicine is permeable to music and music has incorporating tendencies, of the holistic type, on the human being’s psycho-somatic and spiritual levels.

Music may be experimented, understood and analyzed in different manners. The same way the history of music accepted several theories on the essence of music, the history of the music therapy accepted several concepts on music and its significations. The theories on the aesthetics of music reflect the social, historical and cultural frame for the creation and reception of music, which is ever changing. Likewise, the concepts that arose in the history of

the music therapy reflect the various ideas upon music and healing existing in the history of medicine. Consequently, there is no point in submitting a generally valid definition of music in the framework of therapy; however it would make sense forwarding a few aspects related to the essence and significance of music, as they are discussed in contemporary therapies upon the music therapy.

Comprehending music within this theory is closely connected to comprehending human health and nature and, in most cases the elements that will undergo analysis as follows make up a coherent and logical whole.

2. SOUND – POINT OF INTERFERENCE BETWEEN MUSIC AND MEDICINE

Our current preoccupation in connection to music is rather some hermeneutics of itself, in order to attain to an analysis of the problematic nature of sound as artistic form and also as form of energy. Hence the awareness we find ourselves within a fascinating field, with multidisciplinary implications, for both creation and playing-singing-conveying.

Sound is part of life. From time immemorial, people have been using sounds to transmit information about the surrounding world, and to communicate among themselves. Since the beginning of our entering into life, we have been surrounded by sounds, such the beating of our mother's heart and the blurred noise of the external world.

We practically live in a world of sounds: sounds we hear or that we do not hear, musical or chaotic sounds, strange or familiar sounds, annoying or pleasant sounds, sounds that trouble us and sounds that heal us.

The therapy with sounds is one of the highest interests and the therapeutic effect of this method is based on frequently alternating different sounds, which have resonance in certain organs, systems or in the entire human organism.

The energy of the sound, the sonorous energy may be used not only in investigations inaccessible to the human eye, or in transporting at a distance the images and the sounds, but can be also used upon human organism, as the harmonic sonorous waves are capable of favorably influencing the human organism.

The manner wherein they are produced, transmitted and auditorily perceived, as well as the manner wherein the relations, proportions and harmonies of the musical sounds enjoy qualities that are universal, reflect the models existing everywhere in nature. The knowledge referring to these scientific bases will help to better understanding the manner wherein sounds are used to therapeutic purposes.

Sound is motion. More exactly, sound is a vibratory motion produced when objects are moved from one place to another, or when they swing, much like a pendulum weight. As a matter of fact, sounds are produced by small objects, atom-dimensioned or by objects as big as a planet [1].

The sound is the result of a vibratory motion of the particles and of the objects. The vibrations producing sounds stand for an energy existing everywhere in nature, not only within ourselves and the world we live in, but also farther away, in the moon, in the stars, in the Universe [2]. Because of our limitedness from the physiological standpoint, our ears can only detect a reduced fraction from this vast vibratory spectrum. On cosmic scale, the sound is a universal, unseen force, capable of producing deep modifications on several levels, such the physical, emotional and spiritual one. Under the form of the vibratory energy of one's own voice, as well as under the form of the sounds from the surrounding world, the sound brings

about the entering into resonance [1] of the body and of the mind, to the purpose of healing and recovering.

The methods of the sound therapy divide themselves into several specific directions. This way, from this therapy, music therapy branched off and has lately received a high recognition. The word therapy enjoys special popularity, creating from disparate sounds, forms of thinking with their own meaning, beneficially acting upon the human being. There has also been lately developed and perfected the methods of the ultrasound therapy. Likewise the treatment with nature sounds may be deemed as special direction of the sound therapy. This method does not exist however on its own but is organically included in many directions of traditional medicine, particularly in psychotherapy, in airphytotherapy, in other techniques and practices where relaxation and meditation are used. Music is a special form of sound.

It is not only pleasant to the ears, but comprises on the level of vibratory matrix, a system of rhythms, relations, proportions and harmonies existing everywhere in the natural world and in the world created by the human being – from the movement of the planets round the sun [2], to the growth of the cells and of the plants, to the sacred proportions and myths of the ancient myths and religions, to art, architecture and mathematics. Music is a universal human language, of initiation in consecrations [3], playing the role of guide in the consciousness expansion labyrinths and representing at the same time a path towards in-depth healing and spiritual fulfillment [1].

Along the centuries, the human being used the sounds, especially the musical ones, both out of pleasure and to therapeutic purposes.

*«There is within the soul a sensitivity to the sound,
And when the spirit is overwhelmed and the ear
Listens in delight
To tender, warlike, joyful or serious tones,
At unison with what we hear
A chord vibrates within us and our heart responds».*

William Cowper

3. THERAPEUTIC CAPACITY OF THE SOUND

“There is almost no physical affection wherein a certain emotion or mental function should not be directly or indirectly involved, as effect or cause.”

H. Holland, Mental Physiology [4]

The power of music to induce emotional reactions constitutes a continuously evoked theme in literature, standing for the soul of the interpretative art.

Music may replace the logical and analytical filters of the mind, so as to settle a direct contact with deep feelings and passions, within the depths of memory and imagination; determining physical reactions to come out. The somatic and psychic worlds are not separate, but they must be deemed two manifestations of life [5].

Music stands for a special form of sound. It is not only pleasant to the ears, but comprises a system of rhythms, relations, proportions and harmonies; representing at the same

times a path towards healing and spiritual fulfillment. The feeling plays an extremely important place in music, acting with a special force upon the listener's sensitivity.

So as to correctly use the sonorous energies, there is impending the respect towards life, as well as a sense of the moral responsibility. This sense of the responsibility was imposed upon the students in philosophy from ancient Greek and Rome, where much attention was granted to selecting some music with healing effects, meant to assure health, purity and a stable character.

The healing mantras, the psalms and the incantations have very remote and obscure origins. However, examples of special accomplishments reach to us from the entire history. Knowledge upon the rhythms sounds and magic charms have outlived the centuries of materialism, remaining a living legacy for the future.

The Egyptian medical papyruses, dating from 2600 years ago, mention the incantations as treatments for sterility, rheumatic pains and insect bites. Round the year 324 B. C., Alexander the Great regained his health, through some music played at the lyre. The Old Testament mentions that, through his harp chant, David succeeded in chasing away king Saul's sadness. The Essenians and the healers of ancient Greece resorted to sacred words to therapeutic purpose, and in the Hellenistic culture, the flute was deemed a musical instrument whose chant was capable of soothing the sciatica pains and gouty complaints.

The knowledge of the sounds, the rhythms and the psalms stood for an essential component of the healing force possessed and exerted by the shamans, physicians and Druid healing priests, belonging to Celtic culture. Musical themes metaphorically expressing Divine order and beauty are widely spread and very known within mystic literature of Judaism, Christianity, Islam and Gnosticism.

4. HEALING THROUGH SOUND

Music is a modality of penetrating in the nucleus of every cell, of making it vibrate at unison with the harmony of the whole. Any sound existing around us affects our mind and body on multiple levels.

Our body, mind and spirit continuously interact, generating the state of our health. Diseases and affections are the result of a cycle of the type cause and effect, in whose framework one or several links – body, mind and spirit – sends negative inverse signals that affect the others.

The basic principles of any therapy, inclusively the sound therapy, consist in an intervention meant to interrupt the cycle, allowing the restoration of a state as equilibrated as possible, among the body, the mental and emotional resources, and the spirit.

Recent researches, carried out by the experts in the sound therapy and by biologists, have proved the effects of sonorous vibrations upon living cells.

Resorting to diapasons as source for the sound, there was noted that the different frequencies of the sounds from the musical scale brought about the modification in color and shape of the blood cells.

For instance, the note do / C protracted them, made them spherical and the note la / A modified their color from pink to red. The frequencies of the notes could be sufficiently close to the natural frequencies specific to the cells, so as to bring about vibrations through sympathy, to intensify resonances and to remove destructive interferences.

Comparatively to healthy cells, the cancerous cells may be deemed feeble, flask and heavier. Undergoing the action of the same series of rising frequency as normal cells, they

gradually break and disintegrate at 400-480 Hz. There is possible for the resonances to fortify the healthy cells and tissues, exerting a negative effect upon the sick ones. These researches might stand for the beginning of using sounds to therapeutic purposes, for treating cancer.

Similar phenomena to healthy cells and of “discouraging” sick cells might also explain the efficiency of using the diapason in the sound therapy. The pure tone, with a unique frequency, of the diapason is not affected by the temperature modification; this way, among the instruments proper to the sound therapy, the diapason displays particular qualities.

An extraordinary effect on health is exerted by the bell sound, which contributes to the organism getting out of the depressive state.

To hot temperaments (sanguine and choleric) there are recommended musical pieces in minor tonality and to cold temperaments (melancholic and phlegmatic) – those in major tonality.

According to the observations made by researchers and doctors, the vibrations of musical sounds stir up the vegetative mechanisms of superior nervous activity, cause vibrating responses in the sick person’s sub-consciousness. Reactions occur that contribute to a more rapid healing of the patients. In the first place, melotherapy obtains success in treating different types of nervous disorders: psychoses (in combination with psychotropic means), depressive states, schizophrenia. It is of great help in the therapy of manifold psychosomatic affections. As the American physician Allan Vitenberg noted, every music has a beginning, a core and an end, much as any form of existence, and life itself. This is the very reason wherefore human being turns towards it.

Noise troubles the logic of thinking, causes misunderstanding, agitation. So as to become aware of this, we must develop a correct awareness on the action exerted by music or any type of sounds upon a living organism. The science in development tends towards it – the sound therapy, whose purpose is obtaining the harmony between the human being and the environment, finding that link (through a word, music or simply a sound) that should connect for very many years the human being to the health and joy of living.

Pythagoras called the healing through sounds – purification. He conceived remedies for both mind and spirit. Through instruments he had adapted, he would compose a special music diminishing «inferior passions». Pythagoras’ adepts asseverated that music is a therapy of the soul, as it brings about movements contrary to the sick person’s pathological ones.

Therefore, they would propose melodies contrary to those having caused the disease. Aristotle claimed however that every disease of the soul, caused by the swirl of some emotive states (such as anger) may be cured through music, challenging through paroxysm that element, reaching this way to being freed and purified. This way, several researchers were led to elaborating the theory of the *allopathic catharsis* in line with Pythagoras’ adepts and Damone and the one of the *homeopathic catharsis* in line with Aristotle. In the first case, music succeeds not only in educating the soul, but also in healing it, through the musical imitation of the virtue which is desired to be inculcated in the patient. In the second case, the *catharsis* unfolds through the opposite process, which is musically imitating the vice that the patient must be freed from, until declared inoffensive.

5. MUSIC – PROPORTIONS AND COSMOLOGY – TO THE PURPOSE OF RESTORING HUMAN MICROCOSM

“Listening to music must pull to surface the best out of ourselves. It must be like a wind that blows into our sails, so as to bring our sailing vessel as close as possible to what God destined for us.”

Peter Mikael Alvanhov [1]

The Universe is full of light, of cosmic radiations and of many other forms of radiations and waves, which modern telescopes may interpret and transform into sounds destined for the hearing. The researches in the field of radio-astronomy enhanced an orchestral variety of “sounds “generated by the Earth, by the neighboring planets from our solar system, by the sun situated in the core of the system, as well as by mysterious sources of a gigantic force, coming from the depths of the space. Transformed into sounds, these signals produce rhythmical models: cracks, whistles, buzzing, deep planetary “sighs” and drum beating, watch ticking and sometimes bursts and snaps.

The Earth hangs in an apparent silence within the spatial vacuum. However there is no space really unoccupied. The space is full of luminous waves and other forms of natural radiations. Similarly to music itself, these planets are subject the universal laws of the harmony and of the proportions.

The Sun sends forth energies whose frequencies are marked by musical relations, in terms of fundamental notes, harmonics and superior harmonics; eighty harmonics have been identified so far, with cycles ranging between two and eight minutes.

The frequency modifications and the energy accumulations transmitted by solar explosions have deep effects upon terrestrial life. The seismographs registering the earthquake shock waves have shown that, when shaken by an earthquake, the Earth sounds like a huge bell, issuing sounds with the frequencies of 53,1- 54,7 cycles in a minute [1].

These calculations made by current science prove the multitude of the connections between sound, music and the energies of the stars and of the planets.

All these phenomena were not alien to the human being, although he could not have expressed in such advanced terms so far. Nonetheless, Antiquity was full of references and speculations to the forces of the universe generating musical nuances and at the same time producing influences upon human nature; as man has always seen a close connection between the macro-cosmos and himself, as micro-cosmos.

So for instance, in Ancient Egypt, the hieroglyph corresponding to music was also used for joyfulness and well-being. The well-read of Vedic-Sanskrit language from ancient India, as well as the philosophers of Pythagoras’ school from ancient Greece looked at all physical forms as manifestations of music. These doctrines claimed that life and health depended on an uninterrupted range of harmonic relations and proportions, which proceed from the spirit, pass through the body, towards society and external world. The same proportions and harmonics manifest as sound and music.

Correctly applied, the sound may therapeutically act, restoring the musical integrity of the body and of the soul [6]. Many a time, old recipes indicated the use of rhythmical chants and incantations, being part of a traditional selection of sacred melodic sequences. The connection of the voice, of any sound, of the acoustic vibration with the nervous centers has been known ever since Antiquity and was intensely used in the therapeutic practice of the Orient. Of our days, there has been settled that a special importance is carried by the sound uttering intensity. This way, it must be low or medium in treating heart or lung affections; higher – in internal organ therapy.

The well-read pertaining to ancient cultures deemed terrestrial music as an echo or as resonance of cosmic music [2], subject to the same divine laws. If these terrestrial sounds reflect divine laws, they have the power to soothe pain and suffering and likewise to sustain life and healing. Consequently, cosmology and musical theory developed on parallel principles, principles determining the design and manufacturing of musical instruments, the musical composition and the instrumental art, as well as the listeners' attitude. Being in search of universal harmony, humanity may tune its chant so as to be in consonance with the stars [7].

Lyre, at least the lyre with seven strings, imitates the harmony of the spheres. It makes the appearance of a connecting element between the music down here and the one of the planets. It delights the soul in ecstasy, it arouses the nostalgia of the ether, and it provides a first taste of celestial melodies.

The sonorous world made up therefore under the sign of order, harmony, light is but the echo of what is unfolding on cosmic level under the magnificent sound of demiurgic Logos [2].

The passage of the seven fundamental planets through the 12 zodiacal constellations might bear the name of divine movement, inspiring the creators of musical works, offering them a model of perfect and unheard sonority, where to not anyone is allowed. The tonal center and the tonic are for the music exactly what the sun is for the grandiose celestial movement and organization, whence the music of the spheres proceeds.

We may extremely simply discover the same universal proportions on the level of the human body. This way, if we look at the human body as a whole, a few proportions may be discovered.

On the level of the head, the distance from the chin to the eyebrows stands for the interval of a fifth. The narrowing towards the tip of the members illustrates the law of rhythmical diminution, clearly emphasized by the hand proportions.

Sound and music express thereby cosmic laws. They are paths for the passage from the world of our senses to the intelligible world. The laws governing them have been included in the natural world since the beginnings of life. The spatial arrangement of the vegetal and animal cells follows the order of Plato's regular polyhedrons. The bees construct honeycombs of the shape of perfectly hexagonal prisms, the snails and other mollusca emphasize the same harmonic proportions through the spiraled shape of their shells.

Human body constitutes a living manifestation of these ratios and proportions. It displays resonant characteristic features and waits for the positive influence of the therapeutic sounds, wherein height and volume, resonance and harmony play vital parts. Therefore we dare say we are an integrant part of the unique and exact geometry of our planet.

6. VALUE OF MUSIC THERAPY IN MEDICAL PRACTICE

There is worth emphasizing that modern human being enrolls for the same line as the antique man as regards promoting and conjugating medicine with music, aware of one's beneficial role in relation to the other one. Some researchers' contributions might have proceeded from a practical necessity, from a unilateral manner of envisaging the problem. To be sure, a category of diligent people existed, inclined towards the study of medicine and music: physicians preoccupied with music or musicians preoccupied with medicine. This will be proved through an entire series of edifying examples. What was once envisaged from a unilateral, immediate perspective is now an argument towards sustaining the bipolarity music-medicine, entity whose properties define and amplify its curative function. Music and

medicine may be deemed two communication vessels, as medicine is permeable to music and music displays incorporating tendencies, of the holistic type, on the human being's psychosomatic and spiritual levels. In *Musique et medicine* L'Echevin (1981) speaks of an abundance of the literature consecrated to the psychological or medico-psychiatric interpretation of painting, through the analyses dedicated to a painter's biography or through the use of painting and graphical art as instrument for communicating with a sick person; however the same author speaks of discreetness and scarcity in approaching the field of musical oeuvres and the impact they exert on human psychic. In this line, our article only enters its title on the level of raising the awareness on the importance that music might exert in the framework of the treatment methods used by allopathic or even homeopathic medicine.

Manuel Garcia (1805-1906) canto professor, urged by the desire of better transmitting the art of the chant, studied the structure of the vocal chords and likewise their physiology, elaborating a study on human voice and submitting it in front of the Academy of Science from Paris. Based on these studies, he developed the principle of laryngoscopy, becoming its parent; a technique which stills enjoys success of our days.

Within the history of French medicine, Marcel Lermoyez (1858-1929) entered his name as member of the Academy of Medicine, deemed the founder of the clinical services of otorhinolaryngology and one of the chiefs of the French School of otorhinolaryngology. He was lead towards medical studies starting from the love he nurtured for music as he was very interested in the apparatus of the vocal chant [6].

The physiological theory of music based on the study of auditory sensations, by Hermann von Helmholtz (1821-1894), a work which was not only limited to the physiology of music, but also dealt with muscular physiology came to being from the idea of studying the acoustic resonance of the sounds. The list of the medical musicians or of the musical physicians may continue. This way, we will make mention of the Russian A. P. Borodin, in whose bibliography scientific productions on the chemical line alternate with musical productions. Auenbrugger, the Austrian who introduced the technique of percussion in the medical examination, was a keen listener of music. Billroth, famous French surgeon, who revolutionized the stomach surgery, was a distinguished violin and piano player, a friend of Brahms. The immunologist Karl Landsteiner, laureate of the Nobel Prize for having discovered the sanguine groups was likewise a good pianist, particularly endowed interpreter of Beethoven. The noteworthy internist, Jagio was a remarkable interpreter of Brahms at the violin and enjoyed great success as director of the Viennese orchestra of doctors, an orchestra active between 1906 and 1920. At Budapest, the doctors founded a Society for chamber music. The discoverer of local anesthesia, K Schleich was violin player, painter and poet. The same attraction for music was manifested by Romanian doctors such as: Gustav Otremba, Carol Miculi, Mihai Burada, V. Papilian and Liviu Comes. They all studied medicine and music in the country or abroad.

Many learned persons and scientists were lured by the fascinating domain of music, where the empire of sound, rhythm, melody and harmony is absolute. All these components constituted not only a point of attraction, but also one of study upon the impact they have on human being.

We may set about from the premise that the sound is the result of the vibrations sent forth by a body creating the sonorous waves. From these sonorous waves to the sensation of sound, as fact of the consciousness, there are several stages. The generation of the sound sensation is done through the action of the sonorous waves upon the auditory organs, they being in their turn transmitted to the brain through the auditory nerve. This way, the energy of the exterior excitation is being processed by the brain and transformed into a fact of consciousness. Human brain is this way a receiver of sonorous vibrations that it stores, processes and decodes, transforming them in sensations, emotions. The effect of sensation

occurs on the level of all physical qualities (features) of the sound: height, duration, intensity, timbre and spatiality. In their turn, sensations and emotions will produce in the human organism and not only, different effects, as it ensues from the examples below:

In order to enforce the vegetative mechanism in producing the affect, Parhon and his collaborators proved, in a series of researches, made through the method of the pletismography, the modifications in circulation and breathing under the influence of the musical stimulus. The sensorial excitants conditioning the vegetative reflexes may modify the functional state of the tissues and of the organs. This way, the excitations proceeding from the level of the vegetative reflexes may influence the sensitive terminations of the different organs, a new centripetal current being produced on the path of the vegetative sensitivity and afterwards on the cerebral-spinal path, influencing, simultaneously with the perception of music by the auditory analyst, the respective sensitive cortex.

Matching the sounds (all qualities of the sound) in guise of melody may be a measure indicator of the person's affectivity, as function of one's receptivity, and the level of receptivity will depend on the melody capacity to arouse emotions in the receiver (person). This is, therefore, the function of music as human psychology detector.

Although the neural-hormonal issue and the one of the hormonal modifications are insufficiently elucidated, they say listening to music brings about reactions on the hormonal level. Among the most studied hormonal reactions, mention should be made of catecholamine, cortisol and endorphin [8].

On the level of the catecholaminic reaction, only adrenalin and noradrenalin were studied as reactions to the sonorous stimulus. By studying the catecholaminic reaction (adrenalin and noradrenalin) there could be noted, even though relatively, based on associations, some reactions of the neural-vegetative type, such as tachycardia and the rise of the arterial pressure. We have been speaking of a relative association on the neural-vegetative level as the neural-vegetative system receives stimuli of all types, not only of sonorous (music). The solidity of such studies, enhancing the synthesis of adrenalin and noradrenalin during the audition, led to the persuasion that music is an inductor of *eustress* (positive stress, positive reaction), with beneficial effects upon the organism bombarded by the inevitable solicitations of everyday life. The quantity of catecholamine, especially adrenalin could be quantified by Verle and Bell before and after a rock concert [9]. This observation leads us to the idea of the necessity for a control of the reactions we may induce within a patient, offering him to the purpose of audition, some music of much too high intensity, percussive, rhythmical and timbral, such as rock music.

During a test on hypertensive sick persons, Roches and his collaborators followed the curve of the hormonal value (adrenalin and noradrenalin) as well as the one of the arterial evolution, before and after the therapy with one of Strauss' waltzes. The amazing finding was that after the audition, the hormonal values diminished, as well as those of the arterial pressure. There it is how music may turn into a regulator of the neural-hormonal system.

The reaction of the organism to the musical stimulus was also proved on the level of other catecholamines, such as dopamine and serotonin synthesized together with adrenalin and noradrenalin.

The Romanians Iamandescu and Antonescu were preoccupied with the implication of the catecholaminic reaction in the musical stimulus. Their experience covered both healthy subjects and subjects suffering from some diseases; they underwent the auditioning of a Wagnerian musical fragment, with a somber, sad nature. Following this test, in the patients, there could be noted reactions of the catecholaminic type, such as: palpitations, rise in the muscular tonus, cold extremities associated with their personal accounts: despair, anxiety, disquietude. These symptoms were more obvious in persons with pre-existing diseases. The experience above shows us that the catecholamine reaction is directly proportional with the

neural-psychic reaction, the negative affective implication determining ill-fated reactions upon the organism. Hormonal conditioning is not always beneficial to human organism (especially in cardiac persons).

Likewise, music plays a regulating therapeutic effect on the level of cortisol. As a matter of fact, the diminution of the cortisol is due to chasing away stress; however only to the extent in which the patient opens up to music. There is very important for the patient to be open to music, it is however all the same true that unless music is pleasing to the patient, a reaction of aversion towards music may be released, with the consequences of a negative emotional state installation, bringing along the rise in the cortisol level.

Endorphins have been invoked as „music hormones” due to their „morphine-like” action (analgesic and euphoric effect), especially as for some listeners, music constitutes a source of euphoria that may attain ecstasy.

We have emphasized the importance of music on psycho-affective level, knowing well that the positive or even negative results may exert positive or damaging effects upon the somatic level. Such effects may display interest for the teguments, the locomotory apparatus and also the viscera. The somatic answer is present at every auditioning and we think only music of quality may exert positive effects upon the organs and the systems. On the basis of the studies that have been carried through in this field, different clinical and para-clinical methods lay, such as: measuring the pulse, the arterial pressure, the respiratory frequency, RKG, thermography, hormone dosing etc. Much as during the analysis of the musical effect upon the psychic, there is considered the listener’s psyche, under auditioning conditions, there is important not to overlook the possible somatic pathologies of the subject in cause.

Teguments are the most studied organs from this standpoint, due to their accessibility for inspection, as well as to their possibility of being investigated through skin termography. The skin may have various vasomotor reactions, from sensations of hot or cold, up to skin erection (goose flesh).

Locomotory apparatus is directly involved in the relation music - organism, as it is common knowledge that in front of a rhythmical melody, our attitude is to beat the time or even dance. Therefore, the importance of music in the alternative therapy of the locomotory pathologies is self-evident.

Respiratory apparatus is likewise involved in the exercise of the audition. The breathing frequency may be conditioned by the type of music which is being listened to, as rhythmical music may induce the respiration acceleration, while melancholic music may determine the respiratory frequency slowing down.

Cardiovascular apparatus is probably the most involved in the reaction towards the music stimulus, as any psychic process reflects through modifications on its level, being considered a genuine mirror of itself.

Important studies were made upon the digestive apparatus. Luban Plozza (1988) proved the wholesome effect of Mozart’s music upon the digestive apparatus, especially for the ulcerous people. Through inducing the eustress by music, the diminution of the gastric secretion occurs, reaching to its normalization.

Hence the importance of the music for the digestion. Likewise, some researchers showed that music influences the digestive duct through the capacity of rendering more sensitive the innervation area of the pneumogastrum. The impressions that propagate themselves through the acoustic nerve seem to put easier, according to C.I. Parhon, in vibration, the individual affectivity, due to the activity of the auditory nerve and to its interaction with the pneumogastric nerve, an important element of the visceral innervations [6].

Metabolic modifications are hard to study, because of the laborious and expensive type of intervention. The most widely used parameter in this respect is the glycemia. The

researches upon the correlations between the type of music and modifications of the glycemia have emphasized that during hearing musical pieces with exciting character, of high intensity, the glycemia had a rising tendency, while the auditions having slow music within the repertory, were associated to inverse modifications, therefore a diminution of the glycemia.

As a conclusion to all examples presented above, we may say music is much related to the individual's affectivity, emotiveness. Emotional living needs a stimulus, of a certain value and intensity, which in its turn may have a certain duration, quality, expressivity, all depending on every individual's characteristics. The affectivity is closely connected to perception, thinking, imagination, instincts, in a word with other psychic processes. Emotional living has two major components:

- basal affective state, comprising the disposition, the emotion and the affects
- superior affective state, including the feelings and the passions [8].

The connection between affectivity and music is obvious; however the influence of affectivity is not directly correlated to the cognitive interpretation of some ideas circulating in music, being capable of separate evolution. Willems deemed that a close relation existed between the three components of music: rhythm, melody, harmony and the three main elements of human life: physiological life, affective life and mental life. The principle of detention and tension lies at the basis of the affective musical equilibrium. The same alternation is felt on the level of the human body.

This antagonism may be found both on the level of the human body and in music, and therefore it lies at the basis of the reeducation techniques and of the music therapy techniques. In connection to the aspect of human affectivity, we will conclude that our affective resonance towards music is influenced by a series of factors whereof personality, education, culture, as well as the anatomic-physiological particularities and the psychic and somatic pre-existing illnesses, all them of decisive weight for the preference towards one music or another.

Music therapy cannot replace all therapies of allopathic or homeopathic medicine; therefore it cannot be deemed a remedy for all pathologies. Consequently, its indications and counter-indications must be specified and observed. This conclusion is somewhat similar to Freud's assertion, when he asseverated, upon psychoanalysis, which is one of the most elaborated, psychotherapies, that it cannot cure all the psychoses [10]. In the cases of neurosis, this psychotherapy has only limited effects.

As a matter of fact, Freud himself did not nurture the belief in a complete healing through psychoanalysis and therefore many psychoanalysts limit themselves to helping sick persons in becoming aware and undertaking their state of illness so that they might more easily bear their suffering.

Here, we may without doubt and fail intervene with the healing effect, of reacquiring self-trust and the hope in a sound future, through music. Of our days, medicine may avail itself of music therapy even for determining diagnostic. How? Human being is an emitting instrument. Emission may be disturbed by a respiratory, humoral, neurological trouble, or of other nature, altering the overall length of the emitted voice [11]. This way, the doctor endowed with musical ear, will be able to determine a certain direction of research upon the patient's pathology.

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