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THE IMPORTANCE OF PSYCHO-PHYSICAL RELAXATION IN DIMINISHING THE FREQUENCY AND INTENSITY OF MIGRAINE CRISES

Doina MÂRZA-DĂNILĂ, Dănuț Nicu MÂRZA-DĂNILĂ

University "Vasile Alecsandri" of Bacau, Romania

Abstract
Psychological, emotional stress is one of the most common causes for migraines.
In most cases, headaches and migraines are accompanied by comorbid disorders, such as depression, and other emotional disorders, neurovegetative disorders, sleep disorders that can only affect the quality of the patients' lives.
Anti-stress massage, through its effects on the entire body, determines a very good psycho-physical relaxation that substantially contributes to a decrease in the frequency and intensity of the migraine crises.
Keywords: *stress, migraine, anti-stress massage, relaxation;*

INTRODUCTION

In 2004, a study was conducted in the United States of America, on a group of 5100 persons, who were contacted by telephone, aiming to identify the ones who suffer from migraines, according to the International Headache Society (IHS) criteria, the data being then analyzed with the help of a computer program. The results showed that "688 people suffered from migraine crises (13.5%), the prevalence of this disorder among women being of 18%, and of 6% among men. The average age of the persons suffering from migraines was established to be 43. Approximately a third of these persons did not look for medical help. Half of the number of persons suffering from migraines did not consider headache as a manifestation of a disorder, while the other half was taking medicine prescribed by a physician. According to this study, 40% of these persons believed that a doctor could not help them, or that a doctor consultation is too expensive" (http://neurology.mif-ua.com/archive).

Another study was conduced by a team of scientists led by Cristophe Tzourio from the Pierre et Marie Curie University of Paris, France, and was based on the medical observation of 780 persons, over the age of 65, over the course of 10 years. This study aimed to verify the impact that the migraines can have on the cognitive abilities in persons over the age of 65. The people in the studied group completed tests that assessed their cognitive, space-time orientation, and memory abilities, and were investigated using MRI brain scans. The results showed that "21% of the subjects suffered from migraines or severe cephalalgias in their lifetime, on multiple occasions. The MRI test results confirmed that the persons who have suffered from migraines, have twice as many lesions in the micro-blood vessels that irrigate the brain, compared to the people who did not suffer frequent headaches." According to this study, "migraines produce lesions in the micro-blood vessels that feed the brain, thus raising the question whether these lesions can be the basis for an intellectual decline. These small cerebral arteries irrigate the white substance from the brain that has, among other things, the function of transmitting information, as nervous impulses, between the different parts of the brain; these lesions could increase, in a large number, the risk of certain cognitive deteriorations (troubles of reasoning memory), but they could also increase the risk of occurrence of Alzheimer's disease" (http://www.romedic.ro/migrenele-nu-afecteaza-creierul-studiu--0N23227).

Another study was conducted in the USA, on 109 children, over the age of 6, suffering from migraines. "In the case of half of the subjects accusing headaches, accompanied by flashes of light or other seeing problems, the scientists discovered that they had malformations in the heart, as reported in the Journal of Pediatrics. Thus, if other migraine treatments do not work, heart surgery can be an option, the Utah University researchers declared, as cited by the BBC." (http://www.ziare.com/articole/studiu+ migrene+sua)

In 2000, plastic surgeons working at the Cleveland University Hospital (USA) discovered that "the removal of the corrugator muscle, a muscle in the eyebrow area, to eliminate the so-called glabellar wrinkles, leads to pressure being eliminated from multiple endings of the trigeminal nerve, and that in 31 out of the 39 patients who reported migraines, one year after the surgery, the migraine was gone, or considerably diminished" (http://www.brol.ro/ Chirurgia_ migrenei.htm).

There are two currents of opinion regarding the structures starting the migraine attacks: the brainstem, or the cerebral cortex.

According to the first hypothesis, "under the impact of the exogenous factors (bright light, noise), or endogenous factors (hypoglycemia, stress) that overwork the central nervous system of the migraine patient (with a genetically-induced increased sensitivity), there is an overload of the brainstem, which, physiologically, modulates the nociception of the cephalic extremity. There is an increase in the activity of the locus coeruleus nucleus, releasing high quantities of noradrenaline, and also in the dorsal raphe nucleus activity, releasing serotonin. The released neurotransmitters determine, initially, through the projections of monoaminergic pathways at a cortical level, a short

phase of hyperemia in the cortical microcirculation of the frontal lobe, with a speed of 2-3mm/min., without respecting a precise arterial topography, frequently bilateral. The decrease in the local blood flow, by approximately 20%, determines a focal neural suffering, with various clinical expressions, constituting the migraine aura. Concomitantly or successively, in the occipital lobe, under the influence of the cerebral cortex discharges, there is a decrease in the neural activity, an electrical depression that propagates similarly to the oligemic phenomenon that supposedly would be the basis for the manifestations of the neurological aura in the migraine. The extension of the cortical neural phenomenon depolarizes the trigeminal nervous endings surrounding the pial vessels, determining the local release of the calcitonin gene-related peptide. This peptide produces vasodilation, increasing the vascular permeability and the extravasation of the proteins, it favors the synthesis of the thromboxanes by the macrophages, it activates the lymphocytes, it degranulates the mast cells by releasing histamine, resulting an aseptic algogenic neurogenic inflammation. The antidromic transmission of the nervous influx, through a still undetermined mechanism, produces a new depolarization, releasing new neuropeptides, this constituting the extension element for the local inflammatory phenomena" (Dworkin, R., 2002).

In the complex processes of vasodilation and neurogenic inflammation, an important role seems to play the serotonin of central origin (dorsal raphe nucleus), and of peripheral origin, because the locus coeruleus, through its projections on the thoracolumbar spinal cord, stimulates the adrenal glands, with a secondary release of catecholamines that mediates the plaque-forming cells, releasing serotonin, thus amplifying the central vasodilation phenomenon. "The 5-HT2B/5-HT2H receptors, largely spread in the cerebral substance, seem to start the migraine crisis, favoring the release of nitric oxide that has a vasodilator role, and of initiation of the septic algogenic neurogenic inflammation by releasing the calcitonin gene-related peptide" (Ramadan, N., 2003).

"The backers of the hypothesis of the migraine attack starting through an endogenous cortical mechanism support the existence of a cortical hyperexcitability, proved by transcortical magnetic stimulation studies, of incompletely clarified causes, apparently multifactorial (modification of the calcium channels activity, mitochondrial and glutamate metabolism dysfunctions)," determining, through subcortical projections the same previously described modifications (Adams, R., 2001).

Psychological stress represents a moment of demanding for the whole body, the aggression of the stressing agent is first exerted on the psyche, because it influences the activity of all the compartments of the body. For this reason, "any psychological stress represents a test taken not only by the mind of the demanded individual, but also by every organ, especially the ones that are preferentially demanded: the endocrine glands, the immune system, the cardiovascular system, the respiratory system, as well as the organs with a rich innervation, such as the ones composing the digestive system" (Treben, M., 2003). This test is passed successfully in most situations, which explains the body's endurance to the daily avalanche of stressing agents, or even to a prolonged psychological stress.

Psychological, emotional stress is one of the most common causes for migraines. The people with migraines are very affected by stressful events. During these events, certain chemical substances are released in the brain to fight the situation. The release of these substances can provoke vascular changes that cause a migraine. "Repressed emotions, such as anxiety, concern, associated especially with fatigue, can increase muscle tension, and the dilated blood vessels can intensify the severity of the migraine" (http://www.bio-sanatate.com/af_neurologice)

"In most cases, headaches and migraines are accompanied by comorbid disorders, such as depression, and other emotional disorders, neurovegetative disorders, sleep disorders that can only affect the quality of the patients' lives" (Toyos, I., 2009).

"The migraine is greatly responsible for ruining family relations. 90% of the people affected by migraine cannot perform their household activities during their crises, in 85% of the cases, the social relations and professional activities are significantly affected, in 35%, the family relations are affected, and in 30% of the cases, there are problems in the sexual relations. During the parents' migraine crises, the children suffer also, 90% of them being told not to play anymore, 85% being told to be quiet, 40% of the children being unhappy that they cannot invite their friends at home, and 35% that their parents are very irascible during their migraine crisis" (http://www.ncbi.nlm.nih.gov/pubmed.com).

Migraine does not affect only the personal life of an individual; it is also a financial burden for the person and for the society, the costs being direct and indirect. Indirect costs include economic losses due to absence from work, or decreased productivity. Thus, the "indirect expenses caused by migraines cost the American employers 13 billion dollars a year. Direct costs include visits to the doctor, and buying medicine. Most of this sum (3.2 billion dollars) is spent on over-the-counter pain medication"
(http://www.ncbi.nlm.nih.gov/pubmed.com)

METHODS AND PROCEDURES

For this research, we decided to structure and verify experimentally the following hypotheses:

- Presumably, the application of anti-stress massage to the subjects suffering from migraine, during their migraine crises, can ease their pain.
- Presumably, the anti-stress massage, systematically applied in the periods between the migraine crises, leads to the improvement of the symptoms and of the migraine.

The research was conducted on a group of 10 female subjects, aged between 25 and 40, clinically diagnosed with migraine by the neurologist.

We used the anamnestic interview to obtain the necessary information for filling the patients' individual charts, but we also had a usual conversation with the subjects, to obtain information referring to the way in which they perceive their own health. This information allowed us to make the necessary adjustments.

The anamnesis was the essential element, offering information about the patients' age and occupation, the main characteristics of the migraine (quality, intensity, localization, the influence of daily activities on the pain), the chronology of the disorders and when they appeared, the causing, exacerbating, or improving factors, the excessive consumption of toxic medicine and the states of withdrawal, personal and family history related to migraine, pain therapy response, associated signs and symptoms.

To assess the intensity of the pain, we used a numeric scale, on which the patients were able to establish the pain intensity, from 0 (no pain) to 10 (pain as bad as it can be) (Băjenaru, O., 2005).

To have a record of the frequency, duration, and intensity of the pain during the migraine crises, and of the associated symptoms, we asked the patients to keep a journal in which they would write down all these aspects.

We also used an adapted form of the MIDAS Questionnaire (The Migraine Disability Assessment Test)
(http://www.headachebalance.com/midas.asp). The questionnaire evaluates the effect of migraine on the professional, household, family, social, and leisure time activities, over the last 3 months, and is composed of the following questions: On how many days in the last 3 months did you miss work because of your headaches?; How many days in the last 3 months was your productivity at work reduced by half or more because of your headaches?; On how many days in the last 3 months did you not do household work because of your headaches?; On how many days in the last 3 months did youmiss family, social or leisure activities because of your headaches?. The disability score for the migraine crises was calculated as follows: A score of I (0-5 days) - little or no disability; a score of II (6-10 days) - mild disability; a score of III (11-20 days) - moderate disability; a score of IV (over 21 days) - severe disability.

After clarifying the initial status, an intervention program was established, based on three anti-stress massage sessions per week. This program was applied over the course of three months.

"The anti-stress massage is a massage of re-balancing the psyche and the body and of setting them at a level that would ensure a state of well-being. It is a massage of reintegration of the body scheme, of relaxation, of restructuring the personal history. The movements are fluid, enveloping, and successive, like one movement that goes over the entire body, following its shapes and contours. The anti-stress massage aims to reestablish the unity of the body, mind, and psycho-behavior, linking these elements between them. Anti-stress massage determines the rediscovering of the body parts, through a reunification and re-harmonization of the receptive and active parts of the body, thus forming an axis that balances the whole organism." (Mârza, D., 2005).

All the 22 specific anti-stress massage tracks were applied, through successive approach, but also according to the needs, adapting the intervention to the each person's current mood. Each session took between 30 minutes and one hour.

Generally, starting from the similar symptoms reported by the subjects, the following goals for the massage intervention were established:

- Improvement of the nervous reactivity
- The mental and physical relaxation.
- The neurovegetative rebalancing

Figure 1. Pictures taken during the application of the anti-stress massage therapy

RESULTS

The tests were conducted at the beginning of the treatment, at half of the intervention period, at its end, and two months after the treatment ended (to establish the durability of the results obtained by applying the anti-stress massage).

The presentation of the results is based on the calculated averages for the entire group of subjects, for each of the quantifiable items. Thus, the following results were obtained:

- The anti-stress massage applied during the migraine crises did not have the desired effect, determining even a slight increase in the pain intensity (Chart 1).
- The anti-stress massage applied over the course of the treatment, outside the migraine crises determined a gradual decrease in the pain intensity. Two months after the treatment ended, the intensity of the pain was still under the initially reported level. (Chart 2).
- The number of days of disability given by migraine has decreased over the course of the anti-stress massage therapy program, and has maintained under the initially recorded level two months after the end of the treatment (Chart 3).

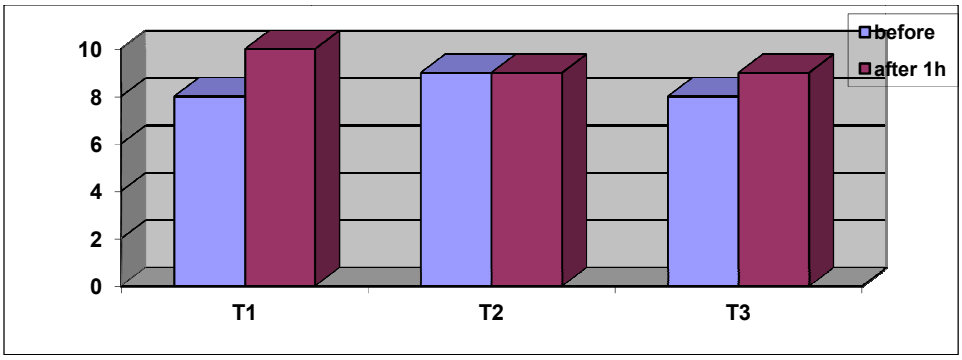

Chart 1. The evolution of the average pain intensity values when the anti-stress massage was applied during the migraine crisis (before and after one hour)

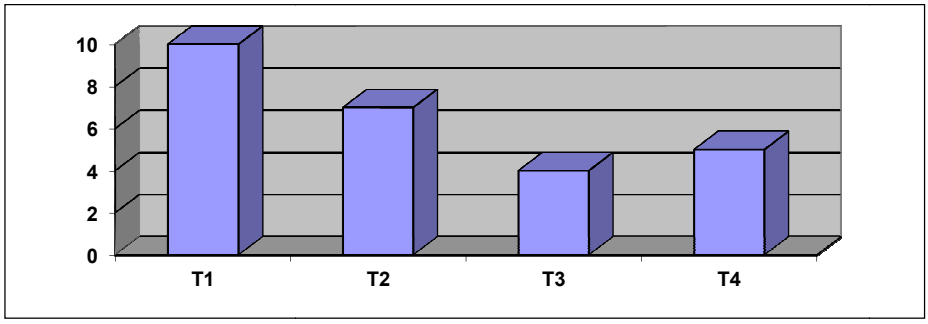

Chart 2. The evolution of the average pain intensity values over the course of the treatment (T1, T2, T3), and two months after its ending (T4)

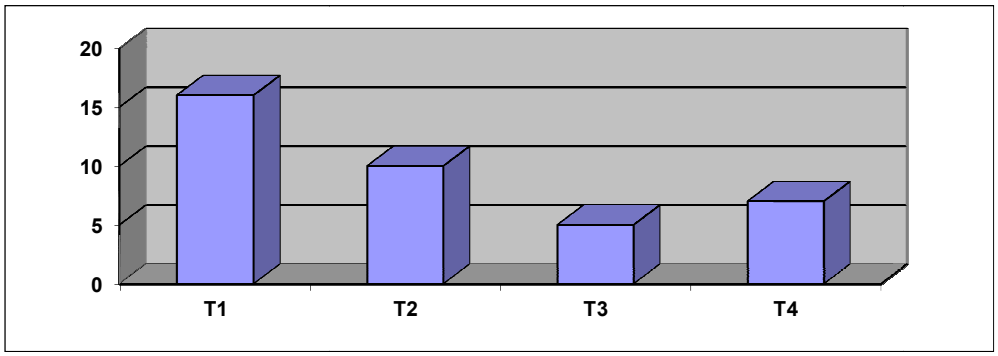

Chart 3. The evolution of the number of days of disability because of the migraine, over the course of the treatment (T1, T2, T3), and two months after its ending

DISCUSSIONS AND CONCLUSIONS

One explanation of the obtained effects would be that due to inducing the state of psychological and physical relaxation, as a result of the application of anti-stress massage, effects that have maintained increasingly more also outside the massage sessions, the subjects were able to control better the conflict situations, keeping their calm under stress a lot more effectively, and controlling better their own stress-induced psycho-behavioral and somatic manifestations.

The anti-stress massage that was applied during the migraine crises did not have any results, the intensity of the pain remaining the same, or even being increased.. Knowing that at the basis of the migraine crises starting mechanism there is a local vasoconstriction, followed suddenly by a vasodilation, we can try to explain the result presented above by two mechanisms:

- The anti-stress massage determines a relaxation of the muscles (especially in the back of the neck), and a release of blood circulation, which leads to a sudden increase in the blood flow in the head.
- The local vasodilation and the increase in the blood flow make the head area to benefit from a relatively sudden influx of blood.

The MIDAS Questionnaire applied before starting the treatment, at the middle of the intervention period, and two months after the experiment ended, emphasized the decrease in the number of days of inactivity because of the migraine over the course of the treatment, and its slight increase two months after it.

As such, one can conclude that the anti-stress massage does not have beneficial effects when applied during the migraine crises, but it has very good effects when applied outside the migraine crises, effects that maintain for a varied period of time, after its application ended.

When one assesses whether the initial hypotheses were confirmed, one can say that the first hypothesis was not confirmed, while the second was confirmed.

The fact that the second hypothesis was confirmed is supported by the following conclusions:

- The effects of the anti-stress massage were the diminution and improvement of the migraine crises (from the standpoint of frequency and duration).
- Its other effect was the considerable diminution of the pain intensity during the crises.
- After the anti-stress massage sessions, the patients observed and reported a state of psychological and physical comfort, which stayed with them throughout the following days.
- Due to the decrease in the intensity and frequency of the migraine crises, the quality of the patients' lives was also improved, the subjects being able to perform easier their usual and professional activities.
- The control test, conducted two months after the treatment ended, proved that after a certain period of time (varied for each patient, and in tight correlation with her own lifestyle), the migraines can come back.

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OPTIMISING MOTOR SKILLS DEVELOPMENT THROUGH DIFFERENTIATING PROCEDURES IN THE PHYSICAL EDUCATION CLASS AT THE LEVEL OF THE 8TH GRADE (BOYS)

George Danut MOCANU

University "Dunarea de Jos" of Galati, Romania

Abstract
The present paper approaches various methods of improving the motor skills development process at the level of the 8th grade in the secondary school, a stage which corresponds to profound somatic-functional transformations recorded during puberty. We propose alternatives for carrying out the teaching undertaking in Physical Education class; namely, an approach which avoids frontal activities, laying emphasis on working with groups made up of students with similar biometric development level. The motor skills contents planning on separate learning units for each group was useful in covering the curriculum elements, and ensured the progress in physical training, avoiding the abandonment and providing an active and conscientious involvement in the class activities.
Keywords*: motor skills, level groups, accesibility, physical effort.*

INTRODUCTION

The motor skills play an important part among the content elements of the physical education pattern in secondary school. They represent the students' physical preparation level which determines the accomplishment of all the other pattern components specified by the curriculum. The motor skills are, in fact, a detailed subject, through "their major involvement in increasing the performance potential" [Alexei M/2006, Triboi V., Pacuraru A./2013].

Also known as motor abilities or biometric skills, they represent the fundamentals or the engine of movement, being strongly genetically determined. In practice, they usually occur in combinations: strength-speed or power, speed-endurance, strength-endurance [Bompa T.O/2002, Alexe N./1993]. Other authors also stress the hereditary factor which determines their manifestation, asserting that they can be approached as human predisposition /motive capabilities which constitute the ground for learnt motor skills. [Manno R./1992, Tudor V/1999, Rata G, Rata B.C./2006].

Rendering the Physical Education class in secondary school effective implies to know and abide by all the didactic principles: establishing the topic, the educational and operational objectives, selecting and planning the content elements specified by the curriculum, measuring the necessary timing for the links, reaching the optimal functional and motor densities, and integrating the lesson as an inseparable element within a cycle. The need to make judicious efforts is another important factor, an aspect characterised by high difficulty level in lessons where topics from motor skills are approached, which often produces the highest curves in the physical effort.

The process of motor skills teaching at the secondary school is carefully approached by the majority of experts, considering that they ensure the physical activities' efficiency and exploit the pubescent pupil's physiological potential [Fiedler P./1993]. Physical education at school determines an extended influence in teaching motor skills and it is a premise for acquiring subsequent greater performance in sports activities which use only certain manifestation forms and combinations. Due to the all-round tackling of skills, it avoids limitation triggered by an early specialisation. The planning of physical efforts on stages (systems or lesson cycles) together with the permanent change in the main parameters of the physical effort determine varied strains of the body, which trigger, in turn, the phenomenon of progressive adjustment to various stimuli and the long-term adjustment. By cumulated action of the organism's functions and systems (synergetic effect) takes place the accomplishment of the scheduled tasks, which increase in volume, intensity and complexity from one year to the next. The effort quantization at puberty is a difficult and important action with beneficial effects on the muscular and osteoarticular system, effects which are more and more difficult to attain in ulterior stages (bone structure, their thickness and solidity, endurance in tension and pressure, favouring the ossification processes can be attained through effort, movement, should the