

POSSIBILITIES OF USING CRANIOSACRAL OSTEOPATHY AFTER HEAD INJURIES IN KICKBOXING PRACTITIONERS

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Abstract

Osteopathic medicine constitutes a new branch of medicine, dealing with a man as indivisible organism. The human body is treated as a whole and has a mechanism of self-regulation and also the structures and functions that are highly dependent on each other, creating a balanced mechanism for mutual support. Described in the article craniosacral approach used in neurotherapy is especially important, mainly because of the small number of contraindications and ability to use even in the case of patient in coma. The paper presents the research and selected examples of techniques and osteopathic therapy, so that this medicinal form was brought closer to the reader. It was also emphasized that only an experienced osteopath, constantly supplementing related to this area knowledge, is able to efficiently and correctly follow the form of treatment. Kickboxing is associated with frequent and repeated micro-injuries of the head, which give a variety of ailments in the treatment of which cranio-sacral therapy turns out to be effective.

Keywords: osteopathy, craniosacral technique, head injury, kickboxing

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Introduction

The increase in global interest and the dynamic development of martial arts increase the number of kickboxing practitioners, as well as related injuries [1]. Important and relatively underestimated are head injuries area serious health problem, especially since they tend to increase. Mostly it is said about injuries to the sideburns, knees and muscle syndromes. And rarely about head injuries. In kickboxing, and in particular competitive kicking, the head is exposed to strong blows and kicks that cause micro-brain injuries. The accumulation of minor and major head injuries becomes disastrous. Compared to other martial arts in kickboxing, among both amateurs and professionals, the head is particularly vulnerable. P. Anderson in his publication estimates that every year between 54 and 60 million people in the world suffer head injuries[2]. The most common causes of these injuries are: traffic accidents, falls from heights, beatings or the effects of loss of consciousness. Unfortunately, many victims are under the influence of alcohol or drugs at the time of the accident [3]. A similar head injury can be suffered as a result of a blow and kick in the head. Trauma depends on many factors, but affects all stages and ages [4]. In this situation, a beneficial factor is the developing medicine, enabling an increasingly higher level of patient care and giving a chance to survive and improve its functions.

Osteopathic medicine in the craniosacral approach can be an effective complement in the case of head injuries due to its holistic and individual approach to each patient, including the possibility of conducting therapy with people with very diverse ailments.

History and main assumptions of osteopathy based on manual therapy. Manual therapy in osteopathy includes manual treatment of disorders, in particular of the

spinal joints, in which there was no clear damage to their morphological structure - that is, functional disorders, reversible. This therapy aims to restore the joints of the spine and peripheral joints to the anatomical position, that is, the right one, in order to eliminate pain by removing pressure on the nerves. The methods used in manual therapy derive from osteopathy and chiropractic (this is scientifically and medically documented chiropractic), which can be integrated with massage and corrective exercises.

Osteopathic Medicine was born at the end of the twenty-first century in the United States. The creator of this method is considered to be Andrew Taylor Still, who was a surgeon by education, but as a result of disappointment with classical medicine, he decided to create a new branch of it, which was to be closer to its roots, i.e. put man and the laws of nature in the foreground [5,6,7].

For Still, the musculoskeletal system, and above all the spine, played a major role. He noted that many diseases and health dysfunctions are accompanied by a limitation of spinal movement.

His merit for medicine is the creation of 4 basic principles on which Osteopathy is based to this day:

1. the human body is a whole,
2. the human body has self-regulation mechanisms,
3. the structure and functions in the human body are interdependent,
4. rational treatment is based on the above principles.

In osteopathy, we can distinguish several main therapeutic approaches:

1. craniosacralne,
2. wisceral,
3. fascial,
4. muscle energy,
5. structural (manipulative).

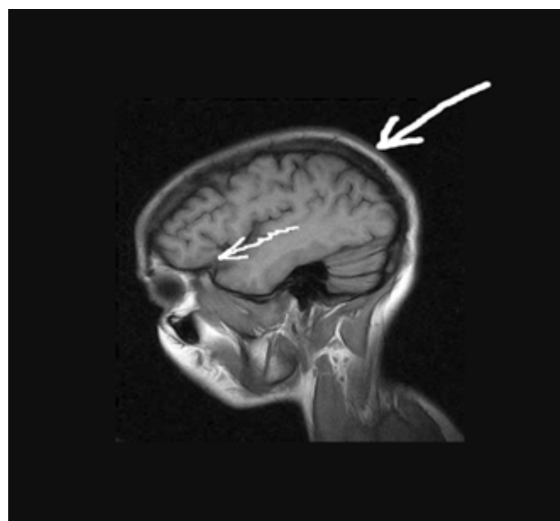
Osteopathy is often placed within the fields of alternative treatment, such as bioenergy the-

rapy, homeopathy, acupuncture, reflexotherapy. This is due to the fact that many people involved in alternative medicine use osteopathic techniques incorrectly. There are many institutions offering courses of selected techniques for masseurs, psychologists, often also laymen who, in order to increase the attractiveness of the courses offered, add the adjective "osteopathic" to the name of their services.

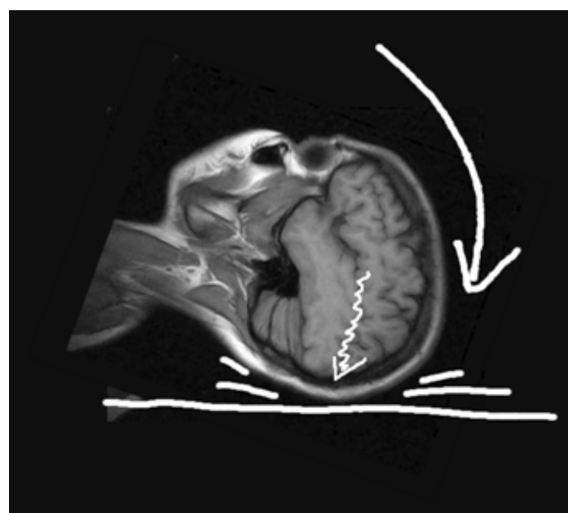
It should be emphasized, however, that almost all manual therapy techniques used in physiotherapy are based on osteopathic concepts, usually being their significant simplification, but they are most often found within academic medicine.

Application and role of osteopathy in the treatment of patients after head injuries: It should be realized that in the case of patients after craniocerebral injuries, osteopathy plays a complementary role for other therapies such as: physiotherapy, occupational therapy, speech therapy. Even a small head contributes to the development of multiple structural, functional and neuropsychological disorders. This event causes a particular variety of symptoms regarding motor impairment, as well as disorders related to memory, concentration, sleep, headaches, noise and many others, which within the framework of traditional physiotherapy can not always be regulated.

Serious craniocerebral injuries are the most common cause of death in the group of traumatic patients. These injuries most often occur as a result of direct brain damage with skull bone fragments and rapidly acting acceleration or delay forces (Fig. 1,2), which damage the nervous tissue both at the site of the injury and on the opposite side, the so-called contrecoup phenomenon (Fig. 3), which is usually caused by the result of shock wave displacement in conjunction with inertia. The brain that arises in this case occurs as a result of the action of various accelerations:



acceleration injury



deceleration injury

Fig.1. Linear accelerations (Own elaboration)

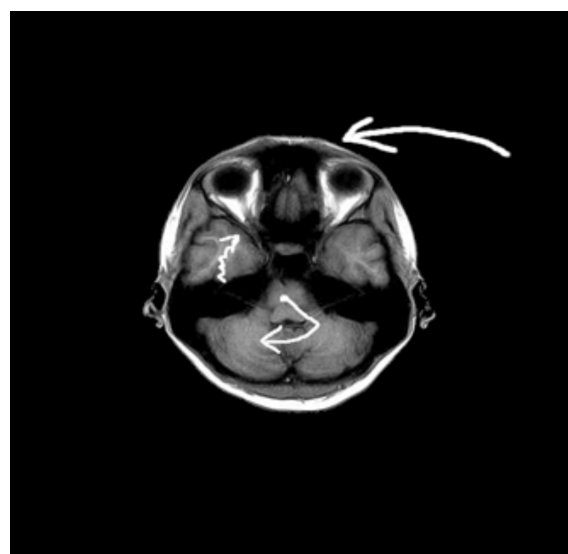


Fig. 2. Rotational acceleration (Own elaboration)

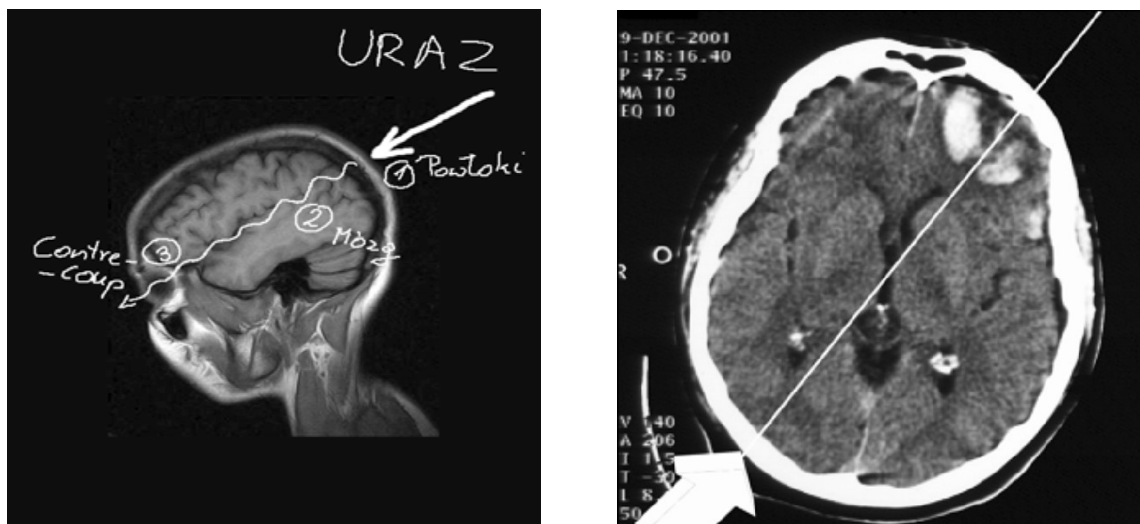


Fig. 3. Countercoup effect (Own elaboration)



Fig.4. Fracture of the skull bone (Own elaboration)

Table 1. Examples of the use of craniosacral therapy

Examples of the use of craniosacral therapy	
General medical	Myofascial pain syndrome Increasing chronic systemic failure Palliative neoplasm treatment phase
Psychological	Anxiety, depression Disorders, post-traumatic stress disorder Anxiety syndromes Anxiety accompanied by mitral valve prolapse
Development	Growth delays Learning difficulties Hyperactivity deficit disorder (ADHD) Infantile colic
Other	Headache Temporomandibular joint dysfunction Whiplash injury to the neck Hemiparesis after a stroke Hemiparalysis after brain injury Allergic rhinitis Chronic otitis media Direct cranial trauma without fracture

Source: Own elaboration based on Leon Chitow, Cranial manipulations on bone and soft tissues. Theory and practice Leon Chitow, DB Publishing 2010

Given these effects, it should be noted that for the treatment of patients after brain injuries a craniosacral approach is particularly useful. This therapy has a very small number of contraindications, and at the same time it does not require logical accounts with the patient, which is why it is often used in infants with developmental disorders [8]. Therefore, it is also suitable for use in patients with mild brain damage and even during coma and other periods during which contact is difficult. This therapy is also used in many other dysfunctions (Tab 1).

It should be remembered that craniosacral therapy is an element of osteopathic medicine and is based on 4 principles developed by Still, therefore the above list cannot be treated as a list of indications for therapy. The primary indication is Cranial Rhythmic Impulse (RIC). The professional approach of the therapist is also based on the knowledge of contraindications to the techniques performed [9].

Contraindications (medically or structurally unstable conditions):

1. Developing stroke,
2. Suspicion of subarachnoid hematoma,
3. Suspicion of acute cranial or cervical fracture,
4. Suspicion of cancer not yet diagnosed or in the process of diagnosis,
5. The possibility of metastasis, if treatment is still sought,
6. Acute encephalopathy or meningitis,
7. Prolapse of the intervertebral disc,
8. Dizziness, loss of consciousness, visual disturbance with neck rotation/side flexion,
9. Local infection, dermatitis or abscess,
10. Untreated fracture,

A thorough interview and examination before starting therapy allows to determine whether a given person has contraindications, but the patient should also be asked if

his health condition has changed.

Very good results are brought by the use of craniosacral therapy according to J. Upledger, derived - like most manual techniques - from osteopathy. In the 30s of the twentieth century, William Garden Sutherland put forward the thesis that the bones of the skull retain mobility. These are minimal movements that take place in the cranial sutures. He conducted many experiments using a specially constructed helmet that compressed and immobilized specific bones of the skull. In this way, depending on the type of brain structures located under the immobilized bone, he managed to cause headaches, dysfunctions of the organs of vision, hearing and balance, and emotional changes. On this basis, he developed a system of subtle hand positions and therapeutic grips, improving the movements of individual skull bones, thus removing the aforementioned symptoms. Scientific research conducted in the 70s of the twentieth century confirmed Sutherland's theories. One of the continuators was the American osteopath J. Upledger, who devoted himself to working with children with developmental defects and cerebral palsy, achieving excellent results.

The cranio-sacral system consists of a set of dura meninges, inside which the brain and spinal cord are located. The whole structure is filled with cerebrospinal fluid, whose natural production rhythm runs at a frequency of 6 to 10 cycles per minute. This mechanism is innate and completely independent of the will and consciousness of man. Any disturbance of this mechanism can cause disease, as it affects the nervous system and the homeostasis system in the body. Craniosacral therapy releases tensions in both the central and peripheral nervous systems. A study related to this approach was conducted in a large psychiatric hospital, as a result of which its effect on brain activity was determined. The author reports that it showed a specific change in the amplitude of alpha and theta brain waves in the back of the brain. It has been suggested that this has a positive effect on sleep disorders, general fatigue, susceptibility to drug addiction, and stress tolerance by "silencing" the

brain [10,11]. The craniosacral approach is also indicated for people overloaded with mental work, having a feeling of a heavy head, helps with depressive states and neurones. It has a beneficial effect on strengthening the immune system, protects against infections and allergies. An interesting study was also conducted by D. Lopez, which analyzed the impact of osteopathic therapy, which placed particular emphasis on the craniosacral approach and its impact on the structures of balance control and postural stability in older people. The publication presents evidence of improved patient balance after therapy [12].

Osteopathy is based on the body's self-healing abilities, therefore the therapist's goal is to stimulate these slingshots. Craniosacral therapy does not cure stroke, its task will be to eliminate dysfunctions that slow down self-healing processes or completely stop them.

Academic medicine tries to determine the tissue, joint, structure responsible for the patient's complaints. In the case of, for example, knee pain, the patient will be performed ultrasound which will show changes in the patellofemoral joint, leczewill not rely on the administration of cartilage rebuilding preparations, physiotherapeutic procedures to improve tissue trophic and strengthen or stretch for specific muscle groups. The whole therapy will be focused around the knee joint and its immediate surroundings.

Osteopathy is based on a holistic approach and probably the osteopath in the case of the above-described patient will devote very little time in his therapy to the knee joint itself, treating cartilage disorders in the patellofemoral joint as an expression of overload, not a disease in itself.

To clarify this issue, two possible approaches to knee therapy in the osteopathic concept are presented. There are endless such approaches, but it should illustrate why in the case of osteopathic therapies we do not rely on indications based on damage or

abnormalities in a given tissue, but instead we look for disorders and chains of connections that may be associated with a given problem.

Knee therapy: Example 1

During the examination, the osteopath finds impaired mobility within the lower costal arches, impaired mobility of the stomach, reduced rotation in the thoracolumbar passage, and increased heel in the iliopsoas muscle. Impaired gastric mobility introduces diaphragm dysfunction, which secondarily leads to blockage in the thoracolumbar passage of the spine (TH-L), and secondary tension of the iliac-lumbar muscle, which in turn causes the femur to be positioned in internal rotation, which changes the path of movement of the patella, leading to overload changes. Alignment of the entire chain, consisting in visceral manipulations of the stomach, manipulation of the thoracolumbar transition, relaxation of the iliopsoas muscle, leading to the correct positioning of the hip bone, and thus, to the restoration of the natural path of the patella and the elimination of the barrier that disturbed the self-healing process.

Knee therapy: example 2

A year ago, the patient suffered a torsional injury of the ankle joint, as a result of which there was a blockage in the upper ankle joint and limitation of the movement of rotation of the tibia relative to the talus during the movement of the dorsal flexion, which consequently also changes the path of movement of the patella. Osteopathic treatment in this case will be aimed at restoring normal mobility of the talus bone, which disturbed the automatic rotation in the knee joint.

Both higher in the ultrasound image and the clinical picture will be identical and this will be referred to as degeneration in the Velcro-femoral joint, while from an osteopathic point of view there will be two completely different cases treated in a different way.

Similarly, it is not possible to determine the

exact indications for specific techniques associated with a given cranial injury. Appropriate therapy will be developed on the basis of the studied RIC disorders.

Cranio-sacral therapy

The creator of craniosacral therapy is Still's student, Dr. William Garner Sutherland (1837-1954). It is based on the hypothesis of the mechanistic forces that move the skull, including fluctuations in cerebrospinal fluid and RIC [10,11]. This concept was created on the basis of many years of research by W.G. Sutherland in the field of skull anatomy, clinical observations of cranial mobility in asymptomatic patients, abnormal cranial mobility in patients with various symptoms, as well as the study of the impact of pressure on individual parts of the skull using a specially constructed device [10,11]. The author based his concept on five key elements, which are:

1. Internal motility of the brain and spinal cord,
2. Fluctuations in cerebrospinal fluid,
3. Mobility of intracranial and spinal meninges,
4. Mobility of the skull bones,
5. Involuntary mobility of the sacrum between the iliac bones.

The above elements presuppose the existence of a Cranial Rhythmic Pulse, which is possible to palpate. In this system of therapy, RIC is the most controversial element of osteopathic medicine, in which osteopathy is very often treated on a par with bio-energy therapy or other alternative methods of treatment. There are many studies denying its existence and the possibility of palpation [13]. However, more and more objective studies provide about the state of summer, which may confirm the existence of RIC and the possibility of influencing the structures of the skull through cranio-sacral

techniques.

In 1999, a study using X-rays and magnetic resonance frames showed changes of about 0.38 mm inside the skull during alternating sagittal and frontal dilation [14]. D.C. Kostopoulos and G. Keramidas in 1992 proved a change in the length of the sickle brain by 1.44 mm under the influence of craniosacral techniques. In addition, with the help of objective research tools, rhythmic movement within the skull was observed at a frequency of 6-9 rhythms per minute. In the light of objective scientific evidence, the existence of RIC is less and less controversial, but the question of what actually causes Rhythmic Impulse remains unanswered [15]. Looking for answers, L. Chitow proposes several different models:

1. Internal mobility of the brain and nervous system,
2. Movement of cerebrospinal fluid ("pressure" hypothesis),
3. Muscle tone and movement force,
4. Lymphatic pump,
5. Venous mobility and/or change in vessel caliber,
6. Tissue pressure,
7. Oscillation of Herring-Meyer,
8. Dostrajani and [9]

Particularly interesting and probably closest to the truth is the theory of fine-tuning, because it connects Trabue-Hering-Mayer waves to RIC. It implies that fine-tuning is the integration or harmonization of oscillations. J. M. McPartland and E. A. Mein identifies the way in which the different rhythms and pulsations that make up the RIC with the process observed in physics and nature, in which patterns and cycles tend to align over time [16].

Craniosacral therapy methodology

In craniosacral therapy, the therapist strives to equalize tensions within the skull of both bone structures, membranes and connections of individual bones, and to normalize RIC.

The therapist begins with palpation, in which he tries to identify the following elements:

1. stop of asymmetry,
2. impaired movement potential,
3. abnormal tissue structure,

4. sensitivity to light pressure,
5. RIC test,
6. careful testing of freedom of movement at the level of the seams and between specific bones,

Then he selects the appropriate technique for cranial therapy (Table 2).

Table 2. Types of cranial manipulations

Types of cranial manipulations	
Direct techniques	Technique performed against tissue resistance. The therapist tries to "stretch" the tissue/structure that is limited or dysfunctional. Cranial therapy uses "tilting" rather than movement, as is the case in classic joint manipulations
Indirect techniques	Technique performed in the direction of tissue resistance. The therapist tries to aggravate the existing dysfunction / limitation, then maintains the above-mentioned state expecting tissue relaxation.
Separation or withdrawal technique	The technique is most often used in the case of limitations within the seams. The therapist moves the limited joint apart with little force.

Source: Own elaboration based on: "Cranial manipulations on bone and soft tissues. Theory and Practice" Leon Chitow", DB Publishing 2010

Thanks to the variety of techniques, osteopathy gives the opportunity to choose the right therapy tailored to a specific patient.

Examples of craniosacral therapy techniques

It is not possible to learn to perform these techniques just by reading. Osteopathic therapy is a holistic concept and is not based on performing a series of manual movements according to a strictly defined

scheme. The therapeutic procedure is created for each patient individually and is based on a logical chain of dysfunctions resulting from anatomical or functional connections.

Mobilization of the frontal bone

When performing this form of therapy, the patient is in a lying position on his back, the therapist sits on the side of the patient's head, he puts his hands on the patient's frontal bone as illustrated in Figure 5 to feel the RIC and any disorders.



Figure 5. Mobilization of the frontal bone (Own elaboration)

The osteopath, after finding dysfunction, performing very gentle pressure with a force of about 10 grams coming out of the elbow joints, carries out the so-called "spred"

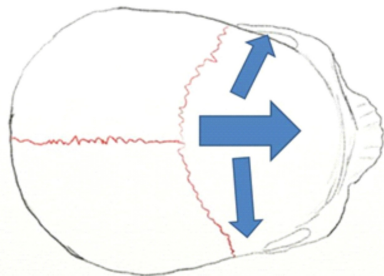


Figure 6. "spred" of the frontal bone

Then the therapist maintains the introduced tension to the momentu in which there will be complete relaxation and obtaining the so-called "liquid tension"², after which he moves on to the second phase of this lifting technique (Fig. 7). The osteopath performs a pulling movement with a force of about 10 grams, again waiting for full relaxation of the frontal bone. Pabout its achievement, ceases to introduce any forces and again b a da RIC, which should be normalized.

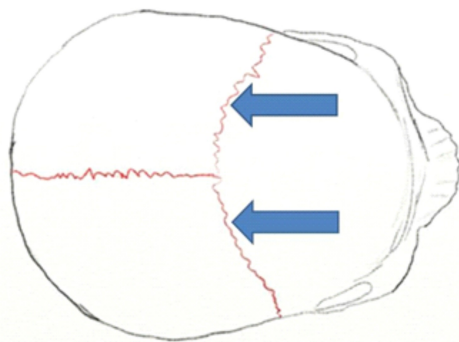


Figure 7. Lifting the frontal bone

If the RIC asymmetry is still felt, it may be due to a blockage at the level of one of the stitiches. The technique of mobilization of the frontoparietal suture should then be performed (Fig. 8). The patient lies on his back with his head slightly rotated. The therapist places the second and third fingers of one hand on the frontal bone and the other on the parietal bone.

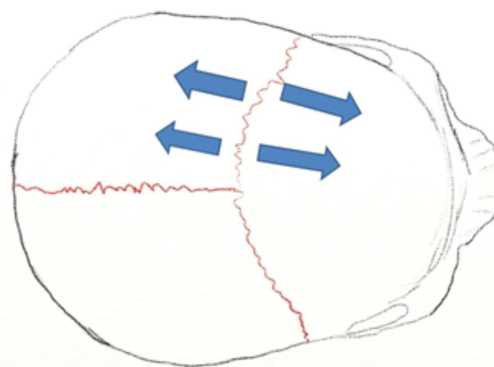


Figure 8. Mobilization of the frontoparietal suture (Own elaboration)

Then wpdistributes tension within the seam, also with a force of about 10g. trying to "stretch" it. It maintains tension until full relaxation occurs, after reaching it, it tests the RIC again.

Clinical case

The clinical case of the therapy shows that osteopathic medicine can be practically used in athletes who have been training kicboxing for years. In clinical practice, structural, visceral and, above all, cranio-sacral therapy was used, which turned out to be therapeutically important. The treated patient, 49 years old, is a long-time practitioner and kickboxing competitor. The main symptoms that did not disappear after various forms of therapy were: headaches combined with a feeling of heaviness and various neuropsychological disorders.

The rehabilitation programme was based on the use of osteopathic elements. Sessions were conducted individually and lasted appro-

ximately 30 minutes. As part of the treatment, visceral, craniosacral and structural techniques were used.

The therapy included the following treatments:

1. Strain/counterstrain technique and reflex point treatment, also known as ischaemic compression,
2. Normalisation of mesenteric root,
3. Barall's technique - 3D liver,
4. Technique for diaphragm normalisation (domes and cruses),
5. Craniosacral technique balancing dura maters,
6. AO technique for occiput balancing dura maters and vagus nerve.

During osteopathic therapy, such ailments as stomach ache or nausea occurred. Both during the procedure and post-operatively, reactions were sporadic. The duration of the procedure was, on average, below 30 minutes, in which it also always contained interview elements to ensure safety and effectiveness of therapy. Hand position, pressure and amplitude were selected on an on-going basis. All of these treatment parameters were individually adjusted to the patient and were always done in the facilitated direction. All presented techniques were performed during 1 session. Sessions were performed regularly 2-3 times a week for 4 weeks.

After the therapy containing osteopathic techniques, in particular sacral-cranio, it brought effects in the form of a significant reduction in headache symptoms and neuropsychological ailments.

Resume

Cranio-sacral therapy arose from clinical experience, which shows that health is something active and dynamic, and not just the absence of diseases. This form of therapy, as well as other types of manual treatment,

maintain a favorable state of health and the mechanisms that regulate it. It also helps to increase physical vitality and well-being not only through its impact on structural changes, but also through broader emotional and spiritual implications. Training and the impact of kickboxing has been controversial for years. Compared to various sports, it turns out that kickboxing is not such an injured sport. Compared to breaststroke swimming, there are fewer lumbar pain syndromes in people who train kickboxing [17]. Kickboxing practitioners are exposed to head injuries. These injuries give various complications and especially in those who have gone through them many times. There are patients who have the greatest disturbance of the homeostasis of the nervous system from the point of view of craniosacral osteopathy. Working with this type of patient is a challenge for the therapist, for whom the craniosacral approach is a good therapeutic tool. Significantly complementary to other neurotherapy methods [18]. It can also be a tool for treating ailments that other methods have not always been able to cope with. The most exposed to chronic ailments requiring treatment are those who have suffered loss of consciousness. Neurotherapy in various forms is now widely used, and the use of biofeedback in sport and the treatment of sports injuries is becoming increasingly popular [19]. Martial arts elements are an attractive element of therapy, which is why tai-chi used in health care units is becoming more and more popular [20]. Looking for an effective method of treating various ailments, cranio-sacral therapy is part of the increasingly widely used Osteopathic Medicine, which already works as a method of work and can be combined with other forms of therapy [21]. Preventing the effects of head injuries requires education and awareness, as well as appropriate cooperation between athletes, coaches and medical professionals.

Resumo

Osteopatia medicino konsistigas novan branĉon de medicino, traktante homon kiel nedivideblan orga-

nismon. La homa korpo estas traktata kiel tutaĵo kaj havas mekanismon de memreguligo kaj ankaŭ la strukturojn kaj funkciojn, kiuj estas tre dependaj unu de la alia, kreante ekvilibran mekanismon por reciproka subteno. Priskribita en la artikolo kraniosakra aliro uzata en neŭroterapio estas speciale grava, ĉefe pro la malgranda nombro da kontraŭindikoj kaj la ebleco uzi ĝin eĉ en kazo de paciento en komato. La artikolo prezentas la esploradojn kaj elektitajn ekzemplojn de teknikoj kaj osteopatian terapion, por ke ĉi tiu kuraca formo alproksimiĝu al la leganto. Oni ankaŭ emfazis, ke nur sperta osteopato, konstante kompletiganta scion rilatan al ĉi tiu areo, kapablas efike kaj ĝuste sekvi la formon de kuracado. Kickboxing estas asociita kun oftaj kaj ripetaj mikro-vundoj de la kapo, kiuj donas diversajn malsanojn en kies traktado kranio-sakra terapio montras sin efika.

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