



Annales Universitatis Paedagogicae Cracoviensis

Studia Naturae, 6: **XX–XX**, 2021

ISSN 2543-8832

DOI: 10.24917/25438832.6.X

Sabina Adamczyk

The Osteopathy Academy, Non-public Continuing Education Institution in Krakow,
Szlak St. 65, 31-153 Kraków, Poland; Sabina04@poczta.fm

Osteopathic capabilities for headache therapy – a short overview

Introduction

In order to define a headache, one should take into account, first of all, its non-specificity, expressed in subjective perception. This symptom is most often located throughout the head and felt both on the surface of the face skin – in the orbital-temporal area, and deep inside the skull. It is characterised by a different intensity and duration. However, headache is not usually a symptom of severe disease, although cluster headaches can lead to severe systemic disturbances (Stovner et al., 2006; Prusiński, 2012).

Headache is the most common phrase searched by patients in the Google browser around the world (Kamiński et al., 2020). It concerns different age groups of society: from children to the elderly (Linnet et al., 1989; Lipton, Stewart, 1993; Anttila et al., 2006; Louw, Schmidt, 2015; Mrozkowiak et al., 2018). Research in recent years has shown that over 90% of people experience at least one headache incident each year. Usually, most people experience so-called random pain, e.g. alcohol syndrome, fatigue, lack of sleep. However, about 15% of people experience more serious ailments in the form of cyclical pains. They are characterised by annoyance, but most of all have a negative impact on the quality of life. They are a disease phenomenon and may require medical attention. The most common pains of this type are: tension headaches, migraine and cluster pains (Malec-Milewska, Woron, 2012; Prusiński, 2012).

The most common form of headache is tension type headache (TTH), affecting approximately 30–80% of cases. They are often called stress or psychogenic pains and arise from increased muscle tension. Patients usually describe TTH as dull, compressive, and tightening pains which radiate to the occiput or forehead. There is also pain involving the back

of the neck. The cause of TTH is, among others, myofascial pain syndrome (MFPS), which is characterised by the occurrence of non-specific muscle pain in the head and neck; often it is not strictly associated with headache. MFPS may affect up to 55% of head and neck pain patients (Stępień, 2003; Fumal, Schoenem, 2008; Chochowska et al., 2015).

Migraine (Lat. *migraena*) is a type of headache experienced by approximately 15–18% of women and 6–8% of men. It most often affects young people, under the age of 40, and is usually characterised by unilateral pain lasting from 4 to even 72 hours. Migraines may be accompanied by nausea, vomiting, sensitivity to light, noise, odours and vegetative disorders. In its course, migraine may transform into daily headaches or may coexist with a tension headache (Gervil et al., 1999; Roźniecki et al., 2018). A migraine headache has a specific location that usually affects the area behind the eyeball, in the forehead, and in the temple. It can have bilateral or alternating symptoms. This pain is sometimes so strong that it excludes the patient from everyday life. Pain of vascular origin is pulsating with the patient's heart rate and is often shooting or excruciating (Glaubic-Łątka et al., 2004; Wójcik-Drażkowska et al., 2007). The classic type of migraine is the so-called migraine with aura. Migraine aura is a type of neurological disorder that, in its classic form, affects eyesight: it causes visual disturbances – spots in front of the eyes, flashes of light in the field of vision, visual acuity disturbance, and sometimes even loss of vision (Domitrz, 2007; Wójcik-Drażkowska et al., 2007).

Cluster headache, otherwise known as Raeder syndrome or histamine headache, formerly known as Horton's headache syndrome (Lat. *cephalea Hortoni*), is the most intense headache. It belongs to the group of primary pains, i.e. those that are not caused by any disease (this group also includes migraine). It most often occurs in men between 20 and 50 years of age. Its causes are unknown. This type of pain is described as excruciating, burning, glaring, stinging, drilling, and above all, very intense. It is unilateral pain, located within the trigeminal nerve (sensorial innervating the face). This pain can also appear in the orbital (behind the eyeball) or temporal area, less commonly in the cheek or jaw (Malec-Milewska, Woron, 2012; Roźniecki et al., 2018).

Patients suffering from chronic headache usually undergo pharmacological treatment, which is known to cause many side effects over a prolonged period of time, often leading to damage to various internal organs. In recent years, a phenomenon has been observed that in alternative pain treatment centres, such as physiotherapy, osteopathy or Chinese medicine, patients look for other methods of non-pharmacological treatment (Stovner et al., 2006; Prusiński, 2008; Łukasik, et al., 2012; Vemuri, Got, 2020; Healy et al., 2021). It is, among

other, a consequence of returning to herbalism and alternative medicine, as well as promoting an ecological, healthy and hygienic lifestyle.

Osteopathy is one of the branches of medicine focused on the natural treatment of the whole person (Greenman, 2005; Speece et al., 2017). Diagnostics and treatment in this field are based primarily on precise palpation, using manual tests and techniques, in order to treat the causes of dysfunction and restore the mobility of each body system. Palpation (Lat. *palpatio*), is an examination by touch – a diagnostic method that involves touching the size, shape, hardness or location of a specific anatomical structure with the fingers. This method is used by doctors in examining the chest and abdominal organs, and also to evaluate the heart rate (Bolechowski, 1982; Greenman, 2005; Wong et al., 2014). Osteopathic treatment is based on the interdependence of anatomy and physiology and the perception of each person as a functional unit, capable of recovering on its own, if the structure and physiological functioning of the body are in the right condition (Jäkel, Hauenschild, 2011). In recent years, this type of therapy has been increasingly used to treat pain, and the basic practices in this area have been developed for a long time (Fig. 1. – Appendix 1).

Taking up this type of topic in the review aspect was caused by the desire to present other, beneficial, and still relatively little known methods of fighting headaches. The current level of knowledge on this subject requires systematisation, as well as indication of which osteopathic therapies bring patients the best results in pain therapies.

Experiments included in the analysis

The bibliography on the effects of osteopathic therapies was analysed through search strategies using medical subject headings (MeSH) and key words in the text. This review is methodically based on the review method used by Jäkel and Hauenschild (2011). The following databases were searched: JAOA (Journal of the American Osteopathic Association), Pubmed.gov. Due to the large number of erroneous records, the use of the word “osteopathy” was abandoned in favour of more specific phrases, consistent with the chosen topic. The key words and phrases selected for the search were: “headache osteopathy”, “non-pharmacological migraine treatment”, “tension headache”, “migraine therapy”, “osteopathy and tension headache”. The words “keys” were used in both Polish and English. A selection was made among the publications from 2005–2020.

The search for given phrases resulted in 220 potential publications, of which 132 were from PubMed and 88 from JAOA. By removing duplicate articles, 180 records were obtained. After analysing the abstracts, articles not related to the subject were rejected. Six publications

relating to experiments in the field of osteopathic headache treatment were included in the further analysis. These were Randomized Controlled Trial (RTC) studies and prospective and retrospective comparative studies: Voigt et al. (2011), Rolle et al. (2014), Adragna et al. (2015), Chaibi et al. (2017), D’Ippolito et al. (2017), Gandolfi et al. (2018). Their short description is presented in table 1.

Tab. 1. Characteristics of the analysed experiments with the use of osteopathic techniques

Research authors	Study type	Subject of study
Voigt et al. (2011)	RCT	Efficacy of OMT in the treatment of migraine
Rolle et al. (2014)	RCT	Studies on the effects of OMTh in patients with frequent episodic tension headaches
Adragna et al. (2015)	Comparative study before and after the intervention	The influence of OMT on pain and quality of life in patients with migraines
Chaibi et al. (2017)	RCT	Adverse Events in CSMT, with single-blind, <i>placebo</i> , and with Randomized Controlled Study for people with migraine
D’Ippolito et al. (2017)	Prospective and retrospective comparative studies	Effect of OMTh on pain and mood disorders in patients with high-frequency migraine
Gandolfi et al. (2018)	RCT	Will myofascial treatment and the use of trigger point therapies reduce pain and pain medication intake in patients undergoing onabotulinumtoxinA injections for chronic migraine?

Note: CSMT – Chiropractic Spine Manipulation Therapy; OMT – Osteopathic Manipulative Treatment; OMTh – Osteopathic Manipulative Therapy; RCT – Randomized Controlled Trial

Types of procedures in analysed osteopathic experiments

Voigt et al. (2011) evaluated the effectiveness of Osteopathic Manipulative Treatment (OMT), combined with standard care, for women suffering from migraines, defined according to the International Classification of Diseases (ICD-10, G43; migraine with or without aura). The researchers gathered a clinical group of 42 women, aged 25–65 years, meeting the defined criteria (minimum 3 migraine attacks per month). Thirteen women were diagnosed with migraine with aura. The duration of migraine symptoms ranged from 2 to 45 years; on average 23 years. The exclusion criteria were as follows: non-medical therapies (e.g. acupuncture, homeopathy) within 8 weeks prior to study initiation, pregnancy, lactation, and neurological diseases (e.g. brain tumours, multiple sclerosis and others). 42 participants were randomly

assigned to 2 research groups (21 people each): OMT and control. A licensed physiotherapist performed osteopathic manipulations of each participant in 5 sessions of 50 minutes over a period of 10 weeks in the OMT group. Osteopathic manipulation involved a variety of techniques at the discretion of the osteopath, tailored to each participant's. The control group did not receive any osteopathic manipulation, sham treatment, or other physical therapy. All women completed standardised health outcomes questionnaires before the study (t_1) and 6 months after the end of the follow-up (t_2). These were: Health-Related Quality of Life (HRQoL), Migraine Disability Assessment (MIDAS), Short Form-36 (SF-36) and the German "Pain Questionnaire" (Schmerzfragebogen des Schmerztherapeutischen Kolloquium eV Dr. Lowendorf).

The Italian team of Rolle et al. (2014) conducted a pilot study on the effects of Osteopathic Manipulative Therapy (OMTh) in patients with frequent episodic tension headaches. They were carried out randomized (RCT), with single-blind, and control of *placebo*. The inclusion criterion for the study was the diagnosis of a frequent episodic Tension Type Headache (TTH). The study excluded people: under 18 years or over 65 years of age, taking acute headache medications for 10 or more days a month in the last 3 months, suffering from pain for less than a year, with mental illnesses and other disorders (e.g. secondary aches of head pains) or with any ongoing prophylaxis during the study period. This experiment included: a 1-month baseline period, a 1-month treatment period, and a 3-month follow-up period. Patients were randomly assigned (coin toss) to the control or experimental group with OMTh. During 4 weekly treatment sessions, patients from the experimental group underwent corrective OMTh techniques. These techniques were not protocol based but were individually tailored for each patient as described by Greenman (2005). Patients in the control group underwent a cranial rhythm assessment (sham therapy), considered a *placebo* – manual techniques were used, but the observed osteopathic disorders were not corrected. At the end of the active treatment period, at 1 and 3 months, patients in both groups were assessed using "Headache Diaries" and the Headache Disability Inventory (HDI). These Diaries included: changes in the frequency of headache reported by patients (number of episodes during the period studied), headache intensity (for each episode in the study period; rated from 1 - lowest pain experienced to 5 and above – worst pain experienced), medication use without prescription (total number of drugs used during the period under study).

Adragna et al. (2015) conducted an experiment on the effects of osteopathic medicine (OMT) in patients with migraine without aura in the form of a pilot study. They examined 8 people: 3 men and 5 women; patients were selected in a private doctor's office and included in

one therapeutic group. The researchers used four osteopathic treatments in the experiment, carried out over the course of 8 weeks. The measures of the result were: frequency of attacks, use of analgesics, completed body awareness questionnaires: MIDAS, Headache Impact Test (HIT-6), SF-36 and Body Awareness Questionnaire (BAQ). Experimental data was collected at baseline (t_0), 1 month after the last treatment (t_1), and 3 months after the last treatment (t_2). From the three months prior to t_0 and throughout the study, all participants completed a “Headache Diary” and continued prescribed drug therapy.

Chaibi et al. (2017) took up the topic related to the occurrence of adverse events in Chiropractic Spine Manipulation Therapy (CSMT). Investigators conducted a rigorously designed experiment, with single-blind, prospective, randomized clinical trial (RCT), using CSMT in migraineurs to assess Adverse Events (AEs), after manual intervention. They recruited a group of 97 migraine patients (83 women and 14 men), aged 18 to 70 years. Participants, who experienced at least 1 migraine attack per month were randomized to the experimental CSMT, *placebo* (non-specific manual touch and non-therapeutic pushing manoeuvre), or control (follow-up medication) groups. Interventions were administered in twelve 15-minute sessions over a period of 3 months. The researchers compared the AEs of participants who completed the study. The results were assessed after 3, 6 and 12 months. The initial exclusion criteria were: contraindications for spine manipulation, spinal radiculopathy, pregnancy, depression and CSMT in the last 12 months. During the experiment, the exclusion criteria also included: any other manipulative intervention of any physical therapist, or pregnancy. AEs were assessed during 703 sessions (355 in the CSMT groups and 348 in the *placebo* groups).

D’Ippolito et al. (2017) undertook to investigate the effect of OMTh on pain and mood disorders in patients with high-frequency migraine. They reviewed the medical records of patients with this type of diagnosis. The inclusion criteria for the experiment were as follows: diagnosis according to ICHD-3b (pain: > 8 and < 15 days per month), participation in the OMTh program and psychological evaluation, before and after the OMTh program. Patients with one of the following criteria were excluded: a different diagnosis of ICHD-3b (e.g. tension headache, chronic migraine), somatic or psychiatric disorders (e.g. major depression, psychosis) and the presence of musculo-skeletal disorders, temporomandibular diseases, neurological or rheumatic diseases. 11 people participated in the study. Patients included in the experiment were subjected to psychological assessment according to standard psychological assessments. The following were used to assess the symptoms of depression and anxiety as well as personality patterns: the Hamilton Depression Rating Scale (HDRS), State-Trait Anxiety

Inventory (STAI), forms X-1 (state anxiety), and X-2 (trait anxiety) and the Millon Clinical Multiaxial Inventory (MCMI-III) – is only used during the first visit. HDI and HIT-6 – used to assess pain and its impact on daily activities. All patients were eligible for osteopathic treatment, but only those who wished to be treated in this way were enrolled in the OMTh program. Four 45-minute sessions were conducted over 8 weeks. These procedures focused on correcting the dysfunctions identified at the first assessment and were performed using myofascial techniques, balanced ligament tension and osteopathy in the cranial field. After the OMTh program, all patients were re-evaluated using the above-mentioned tests.

The last of the analysed experiments by Gandolfi et al. (2018) aimed to determine, whether myofascial treatment and trigger point therapy will reduce pain and reduce pain medication intake in patients undergoing onabotulinumtoxinA injections due to chronic, difficult-to-treat migraine. Adults with persistent migraines took part in the experiment. This was a single-blind pilot study with two parallel groups (experimental and control). The osteopathic intervention used here included manipulative treatment, consisting of techniques aimed at improving joint mobility and reducing the stiffness of the soft tissues of the cervico-thoracic spine – the experimental group (12 people). In addition, TENS current-healing treatment with a portable device (Master 932, Elettronica Pagani srl, Milan, Italy) was used – control group (10 people). The frequency and duration of treatment was the same in both groups: 1 session per week for 4 weeks. Non-clinical and demographic data, including personal habits (e.g. coffee, alcohol and tobacco consumption) were collected during registration using a questionnaire. An evaluator unaware of treatment allocation recorded the results before treatment (T₀), during treatment (T₁), and 1 month after treatment completion (T₂).

The information relating to the detailed characteristics of the individual experiments analysed here related to osteopathic intervention is summarised in table 2.

Clinical benefits of experiments and their analysis in the light of selected literature

In an experiment conducted by Voight et al. (2011), found a significant reduction in total MIDAS; the result was statistically significant in the intervention group as compared to the control. The number of days with migraines, by that the patients suffered while performing their daily duties and activities decreased, but in both the intervention groups with OMT and the control group, it was statistically insignificant.

Tab. 2. Basic information about the analysed experiments

Experiment	Patient population	Assigned groups	Number of sessions/ length of session	Practitioner profile	Way of results collecting
Voigt et al. (2011)	Women with migraines, aged 18 – 65; 13 persons had migraines with aura	Control group n = 21	No intervention	Physiotherapist with osteopathic powers	Comparison of results between the 2 groups
		OMT group n = 21	5 sessions of 50 minutes for 10 weeks		
Rolle et al. (2014)	People aged 18 – 65 with frequent episodic pain	Control group n = 19	Sham therapy	Qualified Osteopath	Comparison of 2 groups: 1-month baseline period, 1-month treatment period and 3-month follow-up period
		OMTh group n = 21	4 OMTh sessions every week		
Adragna et al. (2015)	Adults with migraines without an aura	One therapeutic group n = 8	4 treatments 8 weeks	Qualified Osteopath	Comparison of results at baseline (t_0), 1 month after last treatment (t_1) and 3 months after last treatment (t_2)
Chaibi et al. (2017)	Women and men suffering from migraines	Control group n = 27	No intervention	Not specified	Comparison of 3 groups, after 3, 6 and 12 months of intervention
		<i>placebo</i> group n = 35	Sham therapy		
		CSMT group n = 35	12 sessions of 15 minutes for 3 months		
D'Ippolito et al. (2017)	Adults with migraine	One therapeutic group n = 11	4 sessions of 45 minutes for 8 weeks	Qualified Osteopath	Comparison of results before (t_1) and after intervention (t_2)
Gandolfi et al. (2018)	Adults with migraines, aged 18 – 65	Control group n = 10	Nerve stimulation (TENS); 4 sessions for 4 weeks	Osteopath doctor	Comparison of results between the 2 groups before (t_0), during (t_1) and after treatment (t_2)
		OMTh group n = 12	1 session of 30 minutes per week for 4 weeks		

Note: OMT – Osteopathic Manipulative Treatment; OMTh – Osteopathic Manipulative Therapy; CSMT – Chiropractic Spine Manipulation Therapy

The intensity of pain and work disorders and the number of days of incapacity for work caused by migraine showed a statistically significant reduction in the intervention group. The control group had statistically significant declines only in the functioning of the emotional role. Based on the intention-to-treat analysis design, the OMT group experienced significant improvements in vitality, mental health, body pain, and physical role functioning (4 of 8 HRQoL domains); SF-36 showed statistically significant improvement in the intervention group. Overall, this experiment confirmed the positive effects of OMT on migraine headaches in terms of: reduced pain intensity and reduced number of days with migraine and disability, and in part improved HRQoL.

Based on “Headache Diaries” and HDI, no adverse events were recorded throughout the study in any of the groups of the experiment conducted by Rolle et al. (2014). There was a significant change in headache frequency in the OMTh group (approximately 50% reduction from baseline after 3 months of follow-up) and an absolute difference between the 2 groups at 3 months, with a 33% lower headache frequency in the OMTh group. Over-the-counter medication use only decreased in the OMTh group at all time points after baseline, compared with the mean baseline. Pain intensity also slightly decreased over time in the OMTh group (resulting in an approximately 20% reduction from baseline and after 3 months of follow-up). The overall HDI score showed no significant improvement. However, a comparison between the changes in HDI score in the 2 groups revealed a difference in time in the OMTh group (resulting in an approximately 40% reduction from baseline and after 3 months of follow-up). The obtained results allowed for the conclusion that OMTh is an interesting alternative in TTH therapy. However, it should be remembered that OMTh is not recommended for everyone and is not completely devoid of side effects (Rajendran et al., 2012), although this experiment was not found it.

The results of the experiment of Adragna et al. (2015) showed 100% of somatic dysfunction (SD) in the C1-occipital joint in the first session, and only 37% in the same joint in the second session with OMT. A reduction in SD was observed between OMT sessions, showing a significant reduction in total dysfunction after the third and fourth sessions. The musculoskeletal SD improved with the fourth treatment and the craniosacral system with the second, third and fourth OMT treatments. Significant changes in the results were observed in the HIT-6 scale in the t2 period, MIDAS in the t1 period and the SF-36 scale in the t1 and t2 periods. The BAQ, the second MIDAS, and the results of the “Headache Diary”, despite the reduction of migraine attacks and taking medications, did not produce statistically significant

results. However, this experiment generally showed that OMT had a positive effect in reducing pain and improving the quality of life of migraine patients without aura.

The results of the research team of Chaibi et al. (2017) indicated, that the most common adverse event was local tenderness – 11.3% in the CMST group and 6.9% in the *placebo* group. Fatigue on the day of intervention was reported by 8.5% of participants in the CSMT group and 1.4% in the *placebo* group. Adverse events were mild and transient, and no serious and other adverse events were reported. Thus, this therapy is safe, provided that people with severe contraindications are initially excluded (Rajendran et al., 2012; Chaibi et al., 2017).

D'Ippolito et al. (2017) showed that although the number of migraine attacks per month decreased, this was not considered “clinically significant” because the sample size was small and all patients had the same range of headache attacks (> 8 and < 15 days per month). The results of the STAI X-2, HIT-6 and HDI questionnaires in the study before treatment (T₀) and after treatment (T₁) showed a statistically significant reduction in means. The results observed in this small group of patients showed that OMTh reduced the HIT-6 scores. The change in mean STAI X-2 score was not considered “clinically significant” because both the T₀ and T₁ scores in this test suggested moderate anxiety. The HDI score showed a statistically significant difference between T₀ and T₁, but it was not considered a “clinically significant improvement” anyway. There were no statistically significant changes in the mean HDRS and STAI X-1 scores in the period from T₀ to T₁. In the case of MCMI-III, the result was inconclusive. However, the analysed retrospective study revealed that patients with high-frequency migraine had statistically significant decreases in HIT-6, STAI X-2 and HDI scores after the OMTh program. Nevertheless, it is impossible to draw definitive conclusions about the causal relationship between OMTh and the changes in score and the clinical effect of these changes. One reason is the retrospective, non-randomized selection process, and the other is an equally important, small sample size, which has limited both the generalization of results and the ability to determine the clinical significance of scoring changes. Another limitation was the lack of a control group. The presence of a control group could alleviate potential confounding factors, such as the mechanism of action of therapeutic touch and interactions between therapist and patient, which may have a positive effect on headache (Keller, Bzdek, 1986; Autret et al., 2012). However, this experiment showed that OMTh can have a therapeutic effect on pain and mood disorders in patients with high-frequency migraine and could be useful as part of a multidisciplinary treatment program (Krause et al., 2017).

In the results presented by Gandolfi et al. (2018) showed no significant differences between the groups in the pre-treatment assessment. There were also no significant intergroup

differences in pain intensity in the analysed period. In the post-treatment evaluation, the total consumption of analgesics and non-steroidal anti-inflammatory drugs (NSAIDs) was significantly lower in patients treated with osteopathic therapy than in those treated with TENS. The pressure pain thresholds in the muscles of the upper trapezius, occipital and temporal muscles were significantly lower in patients treated with manipulation than those treated with TENS. The total consumption of painkillers, NSAIDs and triptans was significantly lower after a series of treatments than before treatment in patients undergoing manipulative treatment. No adverse events were reported during and after the experiment. Thus, according to the authors of this experiment, manipulative techniques aimed at reducing peripheral nociceptive triggers may be of added value in treating chronic migraine symptoms and reducing the use of reliever medications.

The comparison of all the results obtained in the analysed experiments is summarised in table 3.

Tab. 3. Main outcomes and effects of analysed experiments, in comparison to control patients or baseline results

Experiment	Effect/result in comparison to control group and/or baseline results
Voight et al. (2011)	<ul style="list-style-type: none"> – statistically significant decrease in the total score in the OTM group; – pain intensity, work disorders, number of days of inability to work due to migraine, showed a statistically significant reduction in the OTM group; in the control group, statistically significant declines in the functioning of the emotional role; – 4 out of 8 spheres tested improved (vitality, mental health, body pain and physical role functioning).
Rolle et al. (2014)	<ul style="list-style-type: none"> – the frequency of pain and its intensity have decreased; reducing the amount of medications taken; – HDI has not changed significantly.
Adragna et al. (2015)	<ul style="list-style-type: none"> – significant changes expressed in reduced pain; – no significant changes in the evaluation of some tests.
Chaibi et al. (2017)	<ul style="list-style-type: none"> – local tenderness was greater in the CSMT group than in the <i>placebo</i> group; – greater fatigue on the day of intervention in the CSMT group than in the <i>placebo</i> group; – the adverse events were mild and transient.
D'Ippolito et al. (2017)	<ul style="list-style-type: none"> – improvement in general condition but not clinically relevant due to a small sample size.
Gandolfi et al. (2018)	<ul style="list-style-type: none"> – in the experimental group, there was a reduction in the doses of drugs taken and an improvement in the range of motion, especially in flexion and lateral bend.

Note: HDI – Headache Disability Inventory; CSMT – Chiropractic Spine Manipulation Therapy

The method of manual osteopathic therapy considered in all the experiments discussed here belongs to the relatively little-known complementary and alternative medicine treatments,

useful in combating pain (Vincent, Furnham, 1997; Vickers, Zollman, 1999). There are studies containing descriptions of the necessary, more or less complicated, manual techniques in this field. An example is the extensive textbook in this area by Greenman (2005), which, in addition to the basics, comprehensively and transparently presents osteopathic tests, treatment methods, as well as frequent clinical images and accompanying diagnostic and therapeutic methods. Nevertheless, much more popular methods from this group are, for example, acupuncture (e.g. Diener et al., 2006; Li et al., 2012; Linde et al., 2015), methods of brain stimulation, such as biofeedback (Nestoriuc et al., 2009) – recently very fashionable, different relaxation methods (Evers et al., 2009), or homeopathy (Ernst, 1999). Their effectiveness has been tested through numerous medical experiments. In the case of osteopathic treatments, there are still few well-planned experiments confirming the effectiveness of this type of therapy. However, randomly selected experiments for this analysis are an example of a keen interest in this subject. On their basis, it can be concluded that in this type of research it is very important to plan them so that the obtained results are as credible as possible, which was especially emphasized by Adragna et al. (2015), Rolle et al. (2014) and D’Ippolito et al. (2017). According to them, an important role is played here, among others, by sample size, presence of a control group, clear exclusion and inclusion criteria – non-standard selection process, OMT tailored to the patient’s needs and a reliable description of the condition before and after therapy.

As for the selection of appropriate treatments individually for each patient, it usually takes place in the clinical practice of osteopathy, with the use of techniques correcting any observed dysfunctions. This is because clinical field observations suggest that standard osteopathic therapies are less effective than those tailored to individual needs (Rolle et al., 2014). The individual relationship of the patient with the therapist-osteopath is also very important, as mentioned earlier (D’Ippolito et al., 2017). Improving the psychological factors that are believed to aggravate the pain and influence the progression of migraine – from episodic to chronic – can be especially important, and a good relationship with the therapist is not neutral in this regard. Considering the overall condition of the patient, OMTh may be an interesting treatment option, for example, episodic pain, characterised by several contraindications and side effects. This therapy is especially indicated for patients not adhering to the treatment regimens and with an increased risk of adverse drugs reactions.

Manipulation techniques aimed at reducing peripheral nociceptive triggers (pain receptors) may be of great value in the treatment of chronic migraine, especially as their side effects are generally minimal or completely unnoticed (Rolle et al., 2014; Chaibi et al., 2017). An interdisciplinary approach, including pharmacological and non-pharmacological treatment,

is also very important (Healy et al., 2021). In this regard, the use of OMT can reduce acute drug intake and muscular-vascular dysfunction in patients with chronic migraine (Gandolfi et al., 2018). Manipulative osteopathic treatment, for example in the case of somatic dysfunctions of the thoracic spine, may require an interdisciplinary team of specialists. Without proper treatment, acute somatic dysfunctions of the thoracic spine can turn into serious chronic problems. Although the main moderator of treatment is a qualified osteopath or physician, a multidisciplinary and holistic approach, requiring the collaboration of several specialists, is currently preferred (Vemuri, Got, 2020). This model emphasizes a multidisciplinary approach to persistent pain due to its intertwined physical and psychological nature (Parkin-Smith et al., 2015). Certainly, combating headaches also requires this kind of interdisciplinary approach.

The articles analysed here supports the hypothesis that osteopathic manipulation has a therapeutic effect on pain and mood disorders in patients with high-frequency migraine and may be useful as part of an interdisciplinary therapeutic program. Many physicians recognise that the traditional methods of pharmacological pain treatment available to date are often unsatisfactory and their social and health costs can be high (Jensen, Stovner, 2008). Positive effects of OMTh on headache control may be due to specific neurochemical effects, including increases in circulating opioids and serotonin levels, involving the descending serotonergic and noradrenergic pathways (Degenhardt et al., 2007). However, the molecular basis of OMTh's clinical outcomes is largely unknown and more research is needed to address this issue.

Conclusion

The experiments presented above confirm the effectiveness of OMT manipulative osteopathic therapy in the treatment of headaches of various origins. Osteopathic treatment in all its range of possibilities of the techniques used, offers great opportunities to reduce pain and improve the well-being of sufferers, especially in migraines and tension headaches. The analysed results also show that the recommended therapy is a very good supplement to standard drug therapy, thanks to which the use of large doses of drugs can be significantly reduced. Researchers of these issues also pay attention to the fact that future experiments should be planned with a sufficiently large sample size. In order to improve the quality of good medical practice, they also encourage osteopaths to use systematic assessment of adverse events in selected manipulative therapy and a holistic, interdisciplinary approach to pain management.

Conflict of interest

The author declares no conflict of interest related to this article.

References

- Adragna, V., Bertino, A.S., Carano, M., Soru, A., Taranto, G., Desideri, R. (2015). Migraine without aura and osteopathic medicine, a non-pharmacological approach to pain and quality of life: open pilot study. *Journal of Headache Pain*, 16(Suppl 1), A180. <https://doi.org/10.1186/1129-2377-16-S1-A180>
- Anttila, P., Metsähonkala, L., Sillanpää, M. (2006). Long-term trends in the incidence of headache in Finnish schoolchildren. *Pediatrics*, e1197–201. <https://doi.org/10.1542/peds.2005-2274>.
- Autret, A., Valade, D., Debiais, S. (2012). Placebo and other psychological interactions in headache treatment. *Journal of Headache Pain*, 13(3), 191–198. <https://doi.org/10.1007/s10194-012-0422-0>
- Bolechowski, F. (1982). *Podstawy ogólnej diagnostyki klinicznej (Fundamentals of general clinical diagnosis)*. Warszawa: PZWL, ss. 146. [In Polish]
- Chaibi, A., Benth, J.R.S., Tuchin, P.J., Russell, M.B. (2017). Adverse events in a chiropractic spinal manipulative therapy single-blinded, placebo, randomized controlled trial for migraineurs. *Musculoskeletal Science and Practice*, 29, 66–71. <https://doi.org/10.1016/j.msksp.2017.03.003>
- Chochowska, M., Klonowska, J., Ogrodowczyk, R., Marcinkowski, J.T. (2015). Napięciowe bóle głowy a zespół bólu mięśniowo-powięziowego. Część I. Klasyfikacja, etiopatogeneza, kryteria diagnostyczne (Tension headaches and myofascial pain syndrome. Part I. Classification, etiopathogenesis, diagnostic criteria). *Hygeia Public Health*, 50(2), 283–287. [In Polish]
- D'Ippolito, M., Tramontano, M., Buzzi, M.G. (2017). Effects of osteopathic manipulative therapy on pain and mood disorders in patients with high-frequency migraine. *Journal of the American Osteopathic Association*, 117, 365–369. <https://doi.org/10.7556/jaoa.2017.074>
- Degenhardt, B.F., Darmani, N.A., Johnson, J.C., Towns, L.C., Rhodes, D.C.J., Trinh, C., McClanahan, B., DiMarzo, V. (2007). Role of osteopathic manipulative treatment in altering pain biomarkers: a pilot study. *Journal of the American Osteopathic Association*, 107(9), 387–400.
- Diener, H.C., Kronfeld, K., Boewing, G., Lungenhausen, M., Maier, C., Molsberger, A., Tegenthoff, M., Trampisch, H.-J., Zenz, M., Meinert, R. (2006). Efficacy of acupuncture for the prophylaxis of migraine: A multicentre randomised controlled clinical trial. *Lancet Neurology*, 5(4), 310–316. [https://doi.org/10.1016/S1474-4422\(06\)70382-9](https://doi.org/10.1016/S1474-4422(06)70382-9)
- Domitrz, I. (2007). Współczesne poglądy na patogenezę aury migrenowej (Contemporary views on the pathogenesis of migraine aura). *Neurologia i Neurochirurgia Polska*, 41(1), 70–75. [In Polish]
- Ernst, E. (1999). Homeopathic prophylaxis of headaches and migraine? A systematic review. *Journal of Pain and Symptom Management*, 18(5), 353–357. [https://doi.org/10.1016/S0885-3924\(99\)00095-0](https://doi.org/10.1016/S0885-3924(99)00095-0)
- Evers, S., Áfra, J., Frese, A., Goadsby, P.J., Linde, M., May, A. (2009). EFNS guideline on the drug treatment of migraine: Revised report of an EFNS task force. *European Journal of Neurology*, 16(9), 968–981. <https://doi.org/10.1111/j.1468-1331.2009.02748.x>
- Fumal, A., Schoenem, J. (2008). Ból głowy typu napięciowego: aktualne badania naukowe i prowadzenie kliniczne (Tension-type headache: current research and clinical conduct). *Neurologia Praktyczna*, 8, 43–60. [In Polish]
- Gandolfi, M., Geroin, Ch., Valè, N., Marchioretto, F., Turrina, A., Dimitrova, E., Tamburin, S., Serina, A., Castellazzi, P., Meschieri, A., Ricard, F., Saltuari, L., Picelli, A., Smania, N. (2018). Does myofascial and trigger point treatment reduce pain and analgesic intake in patients undergoing onabotulinumtoxinA injection

- due to chronic intractable migraine? *European Journal of Physical and Rehabilitation Medicine*, 54(1), 1–12. <https://doi.org/10.23736/S1973-9087.17.04568-3>
- Gervil, M., Ulrich, V., Kaprio, J., Olesen, J., Russell, M.B. (1999). The relative role of genetic and environmental factors in migraine without aura. *Neurology*, 53(5), 995–999. <https://doi.org/10.1212/wnl.53.5.995>
- Glaubic-Łątka, M., Łątka, D., Bury, W., Pierzchała, K. (2004). Współczesne poglądy na patofizjologię migreny (Contemporary views on the pathophysiology of migraine). *Neurologia i Neurochirurgia Polska*, 38(4), 307–315. [In Polish]
- Greenman, P.E. (2005). *Lehrbuch der Osteopathischen Medizin (Deutsch) Gebundene Ausgabe (Textbook of Osteopathic Medicine (German) Hardcover)*. Verlag: Haug Karl, p. 627. [In German]
- Healy, C.J., Brockway, M.D., Wilde, B.B. (2021). Osteopathic manipulative treatment (OMT) use among osteopathic physicians in the United States. *Journal of the American Osteopathic Association*, 121, 57–61. <https://doi.org/10.1515/jom-2020-0013>
- Jäkel, A., Hauenschield, P. (2011). Therapeutic effects of Cranial Osteopathic Manipulative Medicine: a systematic review. *Journal of the American Osteopathic Association*, 111, 685–693.
- Jensen, R., Stovner, L.J. (2008). Epidemiology and comorbidity of headache. *Lancet Neurology*, 7(4), 354–361. [https://doi.org/10.1016/S1474-4422\(08\)70062-0](https://doi.org/10.1016/S1474-4422(08)70062-0).
- Kamiński, M., Łoniewski, I., Marlicz, W. (2020). “Dr. Google, I am in Pain” – Global Internet Searches Associated with Pain: a retrospective analysis of Google trends data. *International Journal of Environmental Research and Public Health*, 17(3), 954. <https://doi.org/10.3390/ijerph17030954>
- Keller, E., Bzdek, V.M. (1986). Effects of therapeutic touch on tension headache pain. *Nursing Research*, 35(2), 101–106.
- Krause, S.J., Stillman, M.J., Tepper, D.E., Zajac, D.A. (2017). A prospective cohort study of outpatient interdisciplinary rehabilitation of chronic headache patients. *Headache*, 57(3), 428–440. <https://doi.org/10.1111/head.13020>
- Li, Y., Zheng, H., Witt, C.M., Roll, S., Yu, S., Yan, J., Sun, G., Zhao, L., Huang, W., Chang, X., Zhang, H., Wang, D., Lan, L., Zou, R., Liang F. (2012). Acupuncture for migraine prophylaxis: a randomized controlled trial. *Canadian Medical Association Journal*, 184(4), 401–410. <https://doi.org/10.1503/cmaj.110551>
- Linde, K., Allais, G., Brinkhaus, B., Manheimer, E., Vickers A., White, A.R. (2015). Acupuncture for migraine prophylaxis. *Cochrane Highlights*. *Sao Paulo Medicine Journal*, 133(6), 540. <https://doi.org/10.1590/1516-3180.20151336T1>
- Linnet, M.S., Stewart, W.F., Celentano, D.D., Ziegler, D., Sprecher, M. (1989). An epidemiologic study of headache among adolescents and young adults. *Journal of the American Medical Association*, 261(15), 2211–2216.
- Lipton, R.B., Stewart, W.F. (1993). Migraine in the United States: a review of epidemiology and health care use. *Neurology*, 43(6 Suppl 3), 6–10. https://doi.org/10.1111/j.1526-4610.2008.01117_1.x.
- Louw, A., Schmidt, S.G. (2015). Chronic pain and the thoracic spine. *Journal of Manual & Manipulative Therapy*, 23(3), 162–168. <https://doi.org/10.1179/2042618615Y.0000000006>.
- Łukasik, M., Owecki, M.K., Kozubski, W. (2012). Leczenie doraźne i profilaktyka napadów migreny (Emergency treatment and prevention of migraine attacks). *Neuropsychiatria i Neuropsychologia*, 7(1), 7–18. [In Polish]
- Malec-Milewska, M., Woroń J. (2012). *Kompendium leczenia bólu (Compendium of pain management)*. Warszawa: Medical Education, s. 130–134. [In Polish]

- Mrozkowiak, M., Walicka-Cupryś, K., Magoń, G. (2018). Comparison of spinal curvatures in the sagittal plane, as well as body height and mass in polish children and adolescents examined in the late 1950s and in the early 2000s. *Medical Science Monitor: International Medical Journal of Experimental and Clinical Research*, 24, 4489–4500. <https://doi.org/10.12659/MSM.907134>
- Nestoriuc, Y., Martin, A., Rief, W., Andrasik, F. (2008). Biofeedback treatment for headache disorders: A comprehensive efficacy review. *Applied Psychophysiology and Biofeedback*, 33(3), 125–140. <https://doi.org/10.1007/s10484-008-9060-3>
- Parkin-Smith, G.F., Amorin-Woods, L.G., Davies, S.J., Losco, B.E., Adams, J. (2015). Spinal pain: current understanding, trends, and the future of care. *Journal of Pain Research*, 8, 741–752. <https://doi.org/10.2147/JPR.S55600>
- Prusiński, A. (2008). Bóle głowy – wybrane problemy (Headaches – selected problems). *Polski Przegląd Neurologiczny*, 4(1), 9–14. [In Polish]
- Prusiński, A. (2012). Miejsce nowoczesnych niesteroidowych leków przeciwzapalnych (NLPZ) w leczeniu bólów głowy (The place of modern non-steroidal anti-inflammatory drugs (NSAIDs) in the treatment of headaches). *Medycyna i życie*, 5/3(16), 6–14. [In Polish]
- Rajendran, D., Bright, P., Bettles, S., Carnes, D., Mullinger, B. (2012). What puts the adverse in ‘adverse events’? patients’ perceptions of post-treatment experiences in osteopathy – a qualitative study using focus groups. *Manual Therapy*, 17(4), 305–311. <https://doi.org/10.1016/j.math.2012.02.011>
- Rolle, G., Tremolizzo, L., Somalvico, F., Ferrarese, C., Bressan, L.C. (2014). Pilot trial of Osteopathic Manipulative Therapy for patients with frequent episodic Tension-Type Headache. *Journal of the American Osteopathic Association*, 114, 678–685. <https://doi.org/10.7556/jaoa.2014.136>
- Roźniecki, J.J., Stępień, A., Domitrz, I. (2018). Rekomendacje i zalecenia ekspertów. Leczenie migreny przewlekłej – zalecenia opracowane przez Grupę Ekspertów Polskiego Towarzystwa Bólów Głowy i Sekcji Badania Bólu Polskiego Towarzystwa Neurologicznego na podstawie międzynarodowych zaleceń i najnowszej literatury (Recommendations and suggestions of experts. Treatment of chronic migraine – recommendations developed by the Expert Group of the Polish Headache Society and the Pain Research Section of the Polish Neurological Society based on international recommendations and the latest literature). *Varia Medica*, 2(5), 402–408. [In Polish]
- Speece, C.A., Crow, W.T., Simmons, S.L. (2017). *Napięcia więzadłowo-stawowe (Ligament and joint tensions). Osteopatyczne techniki manipulacyjne*. Wydawnictwo Galaktyka, ss. 200. [In Polish]
- Stępień, A. (2003). Napięciowy ból głowy (Tension headache). *Nowa Medycyna*, 2, czytelniamedyczna.pl. [In Polish]
- Stovner, L.J., Zwart, J.A., Hagen, K., Terwindt, G.M., Pascual, J. (2006). Epidemiology of headache in Europe. *European Journal of Neurology*, 13(4), 333–345. <https://doi.org/10.1111/j.1468-1331.2006.01184.x>
- Vemuri, A., Got, K.K. (2020). Osteopathic Manipulative Treatment: Counterstrain/FPR Procedure – Thoracic Vertebrae. StatPearls Publishing LLC. on-line: <https://www.ncbi.nlm.nih.gov/books/NBK560601/>
- Vickers, A., Zollman, C. (1999). ABC of complementary medicine. The manipulative therapies: osteopathy and chiropractic. *British Medicinal Journal (Clinical Research ed.)*, 319(7218), 1176–1179. <https://doi.org/10.1136/bmj.319.7218.1176>

- Vincent, C., Furnham, A. (1997). *Manipulative therapies: osteopathy and chiropractic. Complementary medicine: a research perspective*. John Wiley and Sons. pp. 305.
- Voigt, K., Liebnitzky, J., Burmeister, U., Sihvonon-Riemenschneider, H., Beck, M., Voigt, R., Bergmann, A. (2011). Efficacy of osteopathic manipulative treatment of female patients with migraine: results of a randomized controlled trial. *Journal of Alternative and Complementary Medicine*, 17(3), 225–230. <https://doi.org/10.1089/acm.2009.0673>
- Wójcik-Drażkowska, H., Bilińska, M., Nyka, W. (2007). Migrena – rozpoznanie i leczenie (Migraine – diagnosis and treatment). *Forum Medycyny Rodzinnej*, 1(2), 109–114. [In Polish]
- Wong, C.K., Abraham, T., Karimi, P., Ow-Wing, C. (2014). Strain counter strain technique to decrease tender point palpation pain compared to control conditions: a systematic review with meta-analysis. *Journal of Bodywork and Movement Therapies*, 18(2), 165–173. <https://doi.org/10.1016/j.jbmt.2013.09.010>

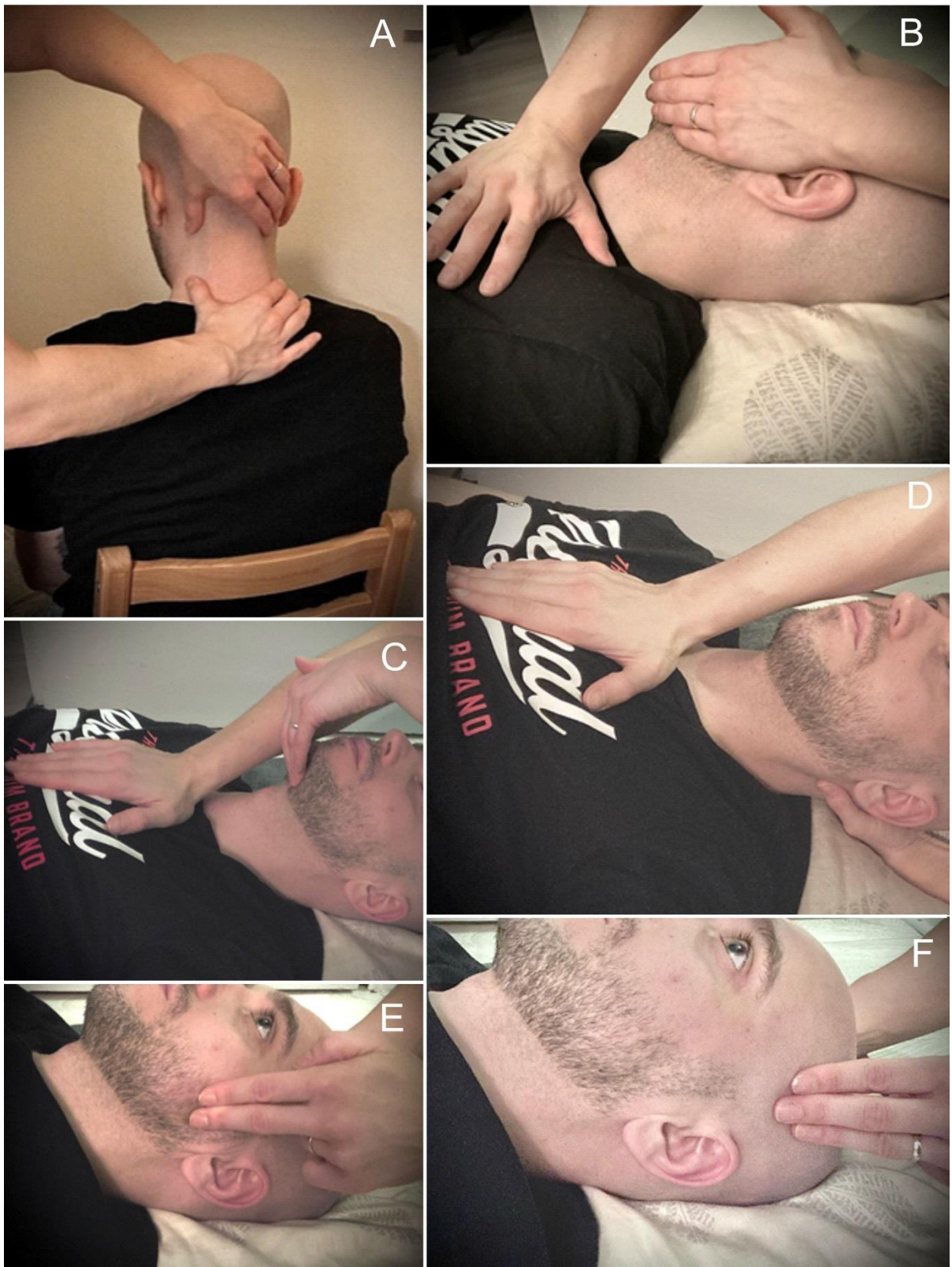


Fig. 1. Classical osteopathic practices in the field of headache therapy: A – neck ligament relaxation, B – positional relaxation of the sternocleidomastoid muscle and the inclined muscles, C – stretching of the cervico-thoracic fascia, D – relaxation of the broad neck muscle, E – relaxation of the temporal muscle, F – relaxing the masseter muscle (Photo S. Adamczyk)

Streszczenie

Celem przeprowadzonego tu krótkiego przeglądu było usystematyzowanie, a także wykazanie skuteczności technik osteopatycznych w różnego typu terapiach bólu głowy. Zestawione powyżej eksperymenty potwierdzają skuteczność manipulacyjnej terapii osteopatycznej OMT w tym zakresie. Leczenie osteopatyczne w całym swym wachlarzu stosowanych technik, daje ogromne możliwości w redukcji bólu i poprawy samopoczucia osobom cierpiącym, szczególnie na migreny oraz napięciowe bóle głowy. Analizowane wyniki wskazują także, że zalecana terapia stanowi bardzo dobre uzupełnienie standardowej terapii lekowej, dzięki czemu zażywanie dużych dawek leków można znacznie ograniczyć. Badacze tych zagadnień zwracają jednocześnie uwagę na fakt, aby przyszłe eksperymenty były planowane z odpowiednio dużą wielkością próby. W celu poprawienia jakości dobrej praktyki medycznej, zachęcają również osteopatów do stosowania systematycznej oceny zdarzeń niepożądanych w dobranej odpowiednio terapii manipulacyjnej oraz całościowego, interdyscyplinarnego podejścia do leczenia bólu.

Key words: alternative medicine, headaches, Osteopathic Manipulative Treatment, OMTh

Received: [2021.02.04]

Accepted: [2021.04.20]