

**EFFECTIVENESS OF CORRECTION OF SYMPTOMS OF MYOFASCIAL PAIN SYNDROME IN PERSONS WITH TEMPO-MANDIBULAR JOINT DYSFUNCTION BY PHYSICAL THERAPY MEASURES**

**ЕФЕКТИВНІСТЬ КОРЕКЦІЇ ОЗНАК МІОФАСЦІАЛЬНОГО БОЛЬОВОГО СИНДРОМУ В ОСІБ З ДИСФУНКЦІЄЮ СКРОНЕВО-НИЖНЬОЩЕЛЕПНОГО СУГЛОБА ЗАСОБАМИ ФІЗИЧНОЇ ТЕРАПІЇ**

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**Abstracts**

Purpose is to determine the corrective effect of the developed physical therapy program on the indicators of myofascial pain syndrome in persons with of the temporomandibular joint dysfunction.

**Material.** 100 people were examined. The comparison group consisted of 35 people without burdened dental status. Group 1 consisted of 33 people with painful dysfunction of the temporomandibular joint, whose symptoms were corrected by wearing individually made splints on the lower jaw. Group 2 consisted of 32 individuals with temporomandibular joint pain dysfunction who wore individual relaxing splints and underwent a three-month physical therapy program. It included therapeutic exercises with the OraStretch® Press System, exercises for the face, neck, cervical region, back, breathing exercises, relaxation exercises; massage course; electromyostimulation of the muscles of the maxillofacial area; proprioceptive neuromuscular facilitation of masticatory muscles, neck muscles; kinesiological taping; progressive muscle relaxation according to Jacobson. The result was assessed by the dynamics of palpation of the tissues of the face and neck, palpation of the structures of the temporomandibular joint according to the Rocabado pain map, measurement of the chin-chest, ear-shoulder distance, and manual muscle testing.

**Results.** In the patients, signs of myofascial disorders were determined in the form of palpable changes in the area of the masticatory muscles, the front surface of the neck and the cervical spine, which was supported by the results of palpation of the structures of the temporomandibular joint according to the Rocabado pain map, the results of measuring the chin-chest, ear-shoulder distance, manual muscle testing. The complex physical therapy program demonstrated a statistically significant better effect ( $p < 0.05$ ) on the studied indicators compared to the initial data. A group of patients who underwent rehabilitation with the use of passive splint therapy did not demonstrate an effect on indicators of myofascial dysfunction; the achieved improvement according to the studied parameters of the orofacial zone were statistically significantly worse than the obtained indicators of the developed and implemented physical therapy program.

**Conclusions.** Means of physical therapy improve the effectiveness of dental orthopedic interventions, therefore, it is advisable to use them to increase the effectiveness of correction, reduce the severity of pathological signs, and improve functioning in patients with painful dysfunction of the temporomandibular joint.

**Key words:** maxillofacial region, rehabilitation, physical therapy in dentistry, orthopedics, temporomandibular joint, joint dysfunction.

## Анотації

**Мета** – визначення корегуючого впливу розробленої програми фізичної терапії на показники міофасціального больового синдрому в осіб з больовою дисфункцією скронево-нижньощелепного суглоба.

**Матеріал.** Обстежено 100 осіб. Групу порівняння становили 35 осіб без обтяженого стоматологічного статусу. Групу 1 становили 33 особи з больовою дисфункцією скронево-нижньощелепного суглоба, корекція ознак якого відбувалась шляхом носіння індивідуально виготовлених сплінтів на нижню щелепу. Групу 2 становили 32 особи з больовою дисфункцією скронево-нижньощелепного суглоба, які носили індивідуальні релаксуючі сплінти, а також проходили програму фізичної терапії тривалістю три місяці. Вона включала терапевтичні вправи з OraStretch® Press System, вправи для обличчя, шиї, шийно-комірцевої зони, спини, дихальні вправи, вправи для розслаблення; курс масажу; електроміостимуляцію м'язів щелепно-лицевої ділянки; пропріоцептивну нервово-м'язову фасилітацію жувальних м'язів, м'язів шиї; кінезіологічне тейпування; прогресивну м'язову релаксацію за Джекобсоном. Результат оцінювали за динамікою пальпації тканин обличчя та шиї, пальпацією структур скронево-нижньощелепного суглоба за картою болю Рокабадо, вимірюванням відстані підборіддя–грудина, вухо–плече, мануальним м'язовим тестуванням.

**Результати.** У пацієнтів визначено ознаки міофасціальних порушень по типу пальпаторних змін у ділянці жувальних м'язів, передньої поверхні шиї та шийного відділу хребта, що підкріплено результатами пальпації структур скронево-нижньощелепного суглоба за картою болю Рокабадо, результатами вимірювання відстані підборіддя–грудина, вухо–плече, мануального м'язового тестування. Програма комплексної фізичної терапії продемонструвала статистично значуще кращий вплив ( $p < 0,05$ ) на досліджувані показники порівняно з вихідними даними. Група пацієнтів, які проходили реабілітацію із застосуванням пасивної сплінт-терапії, не продемонструвала впливу на показники міофасціальної дисфункції; досягнуте покращення за досліджуваними параметрами орофасціальної зони було статистично значуще гіршим від отриманих показників розробленої та впровадженої програми фізичної терапії.

**Висновки.** Засоби фізичної терапії покращують ефективність стоматологічних ортопедичних втручань, отже, їх доцільно застосовувати для підвищення ефективності корекції, зменшення вираженості патологічних ознак, покращення функціонування у пацієнтів з больовою дисфункцією скронево-нижньощелепного суглоба.

**Ключові слова:** щелепно-лицева ділянка, реабілітація, фізична терапія у стоматології, ортопедії, скронево-нижньощелепний суглоб, суглобова дисфункція.

**Introduction.** The prevalence of temporomandibular joint diseases (TMJ), according to a number of authors, is found in 27.5–56% of people in the world, predominantly at a young age; at the same time, dysfunction of the muscle and joint complex among them occupies 95.3% [1; 10]. TMJ dysfunction is a heterogeneous disorder with a multifactorial etiology that leads to an imbalance between the articular disc, the articular capsule and the muscles involved in the act of chewing [1; 14].

Treatment and subsequent rehabilitation of TMJ dysfunction remains one of the most pressing issues in the selection of medical and diagnostic measures. Patients with this pathology are divided into three clinical groups: with a disorder of the muscles involved in chewing; with TMJ articular disk pathology (with or without reduction); with joint dysfunction (arthralgia, osteoarthritis, osteoarthritis) [3; 4].

A number of researchers include in the treatment of patients with TMJ dysfunction

orthopedic measures, such as removable and non-removable mouthguards, relaxing splints [1; 4; 15], but do not take into account the need for more detailed and individual treatment and rehabilitation measures aimed at normalizing the functional state of the TMJ, reducing the level of development and progression of pathological changes in it [3; 7].

Most of the common methods of correction are mainly reduced to measures aimed at eliminating pain sensations in the TMJ area, creating an interocclusal disconnection [4; 7], which does not take into account the level of development and progression of the disease, does not allow long-term stabilization of the pathological process with restoration of occlusal relationships and normalization of jaw muscle function.

Among the methods of treatment and rehabilitation are considered passive preformed factors that affect microcirculation, stimulate reparative processes, have anti-inflammatory

and anti-edema effects, stimulate metabolism and tissue regeneration, normalize the tone of the autonomic nervous system, have an analgesic effect [7; 12].

In recent years, much attention has been paid to the correction of the consequences of dental dysfunction by means of active physical therapy, which can act as methods that potentiate the effect of specialized orthopedic treatment, have an independent corrective effect on muscle and joint dysfunctions of dental origin [1; 7; 11] or act as means of compensating certain functional disorders [2; 3; 9]. The insufficiency of research in the field of research into the effectiveness of physical therapy on changes in the orofacial area as a result of painful TMJ dysfunction determined the relevance of the presented work.

**The purpose of the study** is to determine the corrective effect of the developed physical therapy program on the indicators of myofascial pain syndrome in persons with the temporomandibular joint dysfunction.

**Materials and methods.** 100 people participated in the longitudinal prospective study.

Inclusion criteria: TMJ dysfunction according to the criteria of C. McNeill (1997) (pain in the masticatory muscles, TMJ or peri-articular area, which is usually aggravated by manipulation or work; asymmetric mandibular movement with or without clicking; limitation of mandibular movements; pain is present at least 3 months) [10], full sets of teeth (excluding third molars); consent to participate in the study.

Exclusion criteria: presence of acute or exacerbation of chronic somatic or mental pathology at the time of examination; partial or complete loss of teeth; the presence of orthopedic structures in the oral cavity; arthritis of various etiologies, neuralgia of branches of the trigeminal, glossopharyngeal, tympanic nerves and neuralgia of the pterygoid node, migraine, styloid process syndrome; history of botulinum toxin injections.

The comparison group (CG) consisted of 35 people (15 men, 20 women) aged  $31.4 \pm 3.5$  years without serious dental status (TMJ dysfunction, occlusion disorders, inflammatory processes of oral cavity tissues, untreated dental diseases, etc.).

The group of examined persons with TMJ dysfunction consisted of 65 persons, who were divided into two subgroups by a blind randomized method.

The group of examined persons with TMJ dysfunction 1 (GR1) consisted of 33 persons (12 men, 21 women) aged  $28.2 \pm 2.0$  years, the correction of the signs of the pathology occurred due to the wearing of individually made silicone splints on the lower jaw. Patients were recommended to use them for 4 weeks' day and night, excluding meals. Then they were used only at night for 2 months. An individual cap made it possible to correctly position the lower jaw in space and normalize the position of the articular elements of the TMJ, which leads to the normalization of the muscle-articular complex and the elimination of articulatory and occlusal disorders.

The group of examined persons with TMJ pain dysfunction 2 (GR2) consisted of 32 persons (13 men, 19 women) aged  $25.6 \pm 1.1$  years who underwent a developed complex rehabilitation program, which included not only the wearing of individual relaxing occlusive splints as presented above method, but also the application of a physical therapy (PT) program. The physical therapy program was designed for three months; included therapeutic exercises with the OraStretch® Press System, exercises for the muscles of the orofacial area, neck and cervical region, back, breathing exercises, relaxation exercises; a course of massage of the masticatory muscles (in particular, intraoral), maxillofacial area, neck, cervical collar zone; electromyostimulation of the muscles of the maxillofacial area; proprioceptive neuromuscular facilitation (PNF) of masticatory muscles, neck muscles; kinesiological taping of the maxillofacial area, masticatory muscles, face, neck; progressive muscle relaxation according to Jacobson. Patients were taught the principles of food consumption while avoiding mechanical stress on the TMJ – wide opening of the mouth, biting or chewing solid food, etc.

The purpose of the developed physical therapy program was to: reduce pain and discomfort; improvement of the amplitude of movements

of the lower jaw; decrease in the degree of psycho-emotional tension; normalization of facial (chewing, facial) and neck muscle tone; improvement of microcirculation, reduction of signs of inflammatory and congestive phenomena in the TMJ, peri-articular structures and in the intra-articular disc; improvement (if possible) of occlusal relations.

Patients were examined before the start of the rehabilitation intervention and after three months – the duration of the implementation of the physical therapy program and the use of individual splints.

They palpated the muscles of the masticatory group (temporal, masseter, lateral and medial pterygoid), muscles of the front and back of the neck (sternoclavicular-mammillary, bibdominal, hyoid, trapezius, ladder) to determine their pain, hypertonus, trigger zones on the right and on the left. The results of palpation for the muscle were considered positive when determining these phenomena at least on one side.

The amplitude of movements of the cervical spine was evaluated by measuring the chin-chest distance (normally equal to 0 cm), the difference in the ear-shoulder joint distance when the head is tilted to the right and left.

The TMJ structures were palpated according to the “pain map” proposed by Dr. Mariano Rocabado allows, through the topographic division of TMJ in eight sectors, the possibility of identifying joint disorders [12; 13]. Antero-inferior synovial lesions were indicated by pain in zone 1, anterior-superior synovial – zone 2, lateral ligament – zone 3, temporomandibular ligament – zone 4, posterior-inferior synovial – zone 5, posterior-superior synovial – zone 6, posterior ligament – zone 7, retrodiscitis process, inflammation with painful and disabling bleeding – zone 8 [6].

Masticatory muscle strength was assessed by manual muscle testing (MMT). Their relative functional level was determined in relation to the intended activity for each movement and muscle group separately: opening the mouth (depression of the lower jaw), closing the mouth (elevation of the lower jaw), deviation (lateral deviation of the lower jaw), protrusion (protrusion) of the lower

jaw. The obtained results were characterized as F – Functional (the movement looks normal or has only a slight deterioration); WF – Weak Functional (moderate impairments affecting the degree of active movement); NF – Nonfunctional (severe movement disorders); 0 – no movement [8].

Statistical processing of the results was carried out in the “Statistica 10” program. Arithmetic mean (M), standard deviation (S) and standard error of the mean (D) were calculated to describe the obtained quantitative characteristics. Differences at  $p < 0.05$  were considered statistically significant.

The study was conducted taking into account the principles of the Declaration of Helsinki of the World Medical Association “Ethical principles of medical research with the participation of a person as an object of research”. Informed consent was obtained from all individuals of the comparison group and those with TMJ dysfunction involved in the presented study. The research protocol was discussed and approved at the meeting of the Bioethics Commission of Vasyl Stefanyk Precarpathian National University.

**Research results.** The presence of myofascial pain syndrome in patients with TMJ dysfunction was manifested by numerous signs of dysfunction of the soft tissues of the orofacial zone and neck. Their localization and severity became the justification for the selection criteria of physical therapy and their corrective orientation.

The prevalence of signs of myofascial pain syndrome during palpation in the form of local tenderness, hypertonicity, trigger zones was found in the muscles of the face, head and neck, which participate in the processes of TMJ movements and the cervical spine: temporal (GR1 – 60.6%, GR2 – 65.6%), masticatory (in 100% of GR1 and GR2), lateral (GR1 – 60.6%, GR2 – 56.3%) and medial (GR1 – 54.5%, GR2 – 59.4%) pterygoid, sternoclavicular-mastoid (GR1 – 90.9%, GR2 – 93.8%), digastric (GR1 – 33.3%, GR2 – 31.3%), sublingual (GR1 – 27.3% , GR2 – 21.9%), trapezoidal (GR1 – 84.8%, GR2 – 90.6%), scalene (66.7% and 71.9%).

Limitation of TMJ mobility, antalgic forced position of the head and neck, reduction of usual activity led to limitation of movements of the



cervical spine. According to the chin-sternum test, a decrease in the amplitude of flexion was determined by almost three times in people with TMJ dysfunction compared to CG, the difference between the distance between the auricle and the shoulder joint on the affected and intact side was also significant (Fig. 1). Such limitation of movements indicates a pronounced myofascial syndrome of the soft tissues of the neck, to which it is advisable to direct the action of the selected means of physical therapy.

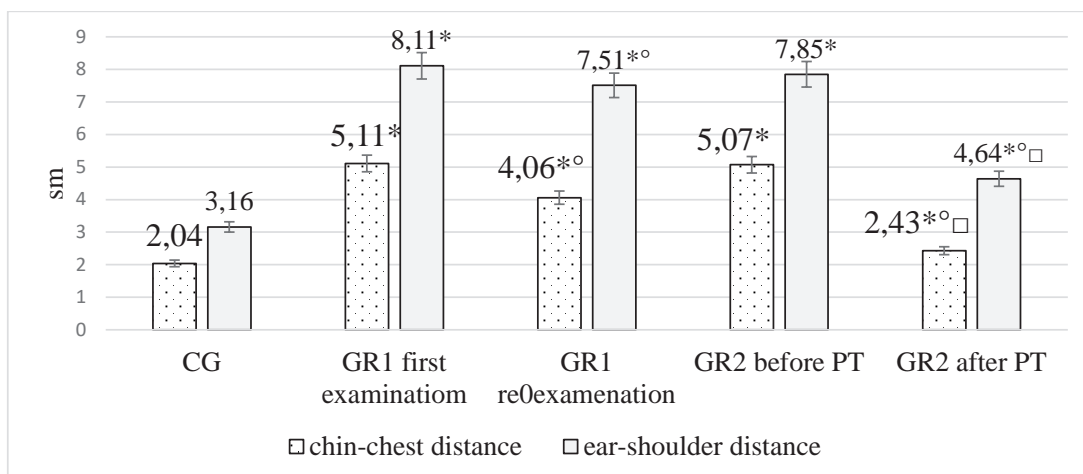
Specific diagnostics according to the Rocabado pain map demonstrated that during the initial examination in patients with pain dysfunction, in fact, all zones showed tenderness, testifying to the capture of all TMJ structures (ligaments, articular cartilage, intra-articular disc) in the inflammatory-dystrophic process (Table 1).

Evaluation of MMT results in individuals with TMJ dysfunction showed that the movement of opening the mouth (mandibular depression) with the participation of the lateral pterygoid, supra- and hypoglossal muscle groups was the least changed (Table 2). When analyzing the structure of MMT indicators, no persons with a non-functional result or the inability to perform a movement were

identified. MMT results for the mouth closing movement (elevation of the lower jaw) involving the masticatory, temporalis, and medial pterygoid muscles were relatively poorer in structure because this movement requires overcoming an obstacle. Opening and closing the mouth are the main movements that perform the function of biting off food, chewing, therefore, their violation worsens the quality of life of patients.

Low parameters characterized the movement of the deviation of the lower jaw, which is provided by the lateral and medial pterygoid muscles: MMT revealed individuals with this non-functional movement, a large proportion of individuals with low functionality. Protrusion of the lower jaw involving the lateral and medial pterygoid muscles showed the worst result: 6–7% of the examined persons with TMJ dysfunction could not perform this movement. Deviation and protrusion of the lower jaw play an important role in chewing food, adding to the picture of functional limitations in the process of food consumption.

The expression of signs of myofascial changes became the justification for the use of selected means of physical therapy not only in the area



**Fig. 1. Dynamics of flexibility of the cervical spine in patients with TMJ dysfunction under the influence of rehabilitation measures**  
 (\* –  $p < 0.05$ , statistically significant difference between the corresponding parameters CG and GR1, GR2; ° –  $p < 0.05$ , statistically significant difference between the corresponding parameters of the initial and repeated examination before and after physical therapy; □ –  $p < 0.05$ , statistically significant difference between the corresponding parameters GR1 and GR2)

Table 1

**Dynamics of TMJ structures palpation results according to the Rocabado pain map in persons with TMJ dysfunction under the influence of rehabilitation measures**

Rocabado zone pain map	GR1 (n=33), % (absolute number)		GR2 (n=32), % (absolute number)	
	Initial examination	Re-examination	Before FT	After FT
1 antero-inferior synovial	100 (33)	84.80 (28) °	100 (32)	62.5 (20) °□
2 anterior-superior synovial	100 (33)	81.8 (27) °	100 (32)	56.3 (18) °□
3 lateral ligament	100 (33)	78.8 (26) °	100 (32)	53.1 (17) °□
4 temporomandibular ligament	100 (33)	84.8 (28) °	100 (32)	62.5 (20) °□
5 posterior-inferior synovial	100 (33)	72.7 (27) °	100 (32)	43.8 (14) °□
6 posterior-superior synovial	100 (33)	81.8 (27) °	100 (32)	46.9 (15) °□
7 posterior ligament	100 (33)	78.8 (26) °	100 (32)	53.1 (17) °□
8 retrodiscitis, inflammation	90,9 (30)	66.7 (22) °	93.8 (30)	46.9 (15) °□

Notes: ° –  $p < 0.05$ , statistically significant difference between the corresponding parameters of the primary and repeated examinations before and after physical therapy;

□ –  $p < 0.05$ , statistically significant difference between the corresponding GR1 and GR2 parameters.

Table 2

**Dynamics of the structure of MMT results in patients with TMJ dysfunction under the influence of rehabilitation measures**

Tested MMT movement	Scale	CG (n=35), % (absolute number)	GR1 (n=33), % (absolute number)		GR2 (n=32), % (absolute number)	
			Initial examination	Re-examination	Before FT	After FT
jaw depression	F	100 (35)	87.88 (29)	100 (33)	87.50 (100)	100 (32)
	WF	0	12.12 (4)	0	12.50 (4)	0
	NF	0	0	0	0	0
	0	0	0	0	0	0
jaw elevation	F	100 (35)	81.82 (27)	96.97 (31)	78.13 (25)	100 (32)
	WF	0	18.18 (6)	3.03 (1)	21.88 (7)	0
	NF	0	0	0	0	0
	0	0	0	0	0	0
jaw deviation	F	82.86 (29)	51.52 (17)	69.70 (23)	53.13 (17)	93.75 (30)
	WF	17.14 (6)	45.45 (15)	30.30 (10)	40.63 (13)	6.25 (2)
	NF	0	3.03 (1)	0	6.25 (2)	0
	0	0	0	0	0	0
jaw protrusion	F	77.14 (27)	24.24 (8)	45.45 (15)	28.13 (9)	68.75 (22)
	WF	22.86 (8)	48.48 (16)	45.45 (15)	46.88 (15)	31.25 (10)
	NF	0	21.21 (7)	9.09 (3)	18.75 (6)	0
	0	0	6.06 (2)	0	6.25 (2)	0

of the orofacial zone, but also in the neck and surrounding tissues. The homogeneity of the studied contingent of patients made it possible to assess the effectiveness of the developed physical therapy program.

A decrease in the severity of myofascial dysfunction was manifested in a decrease in the frequency of detection of pain during palpation and trigger zones in the muscles – temporal (GR1 – by 30.3%, GR2 – by 65.6%), masticatory (GR1 – by 42%, GR2 – by 90.6%), lateral

pterygoid (GR1 – by 33.3%, GR2 – by 46.9%), medial pterygoid (GR1 – by 24.2%, GR2 – by 53.1%), sternoclavicular-mastoid (GR1 – by 27.3%, GR2 – by 93.8%), digastric (GR1 – by 21.2%, GR2 – by 31.3%), sublingual (GR1 – by 24.2% , GR2 – by 21.9%), trapezoidal (GR1 – by 21.2%, GR2 – by 75.0%), scalene (GR1 – 15.2%, GR2 – 62.5%).

The use of therapeutic exercises, massage, kinesiological taping of the front surface of the neck and cervico-collar zone led to an improvement in

the mobility of the cervical spine: in GR1 subjects, the distance between the chin and sternum during neck flexion decreased by 20.5%, GR2 – by 52.1% ( $p < 0.05$ ), ear-shoulder distance – by 7.4% and 40.9% ( $p < 0.05$ ), respectively (Fig. 1). The improvement of the mobility of the cervical spine was facilitated by the leveling of the myofascial syndrome of the shoulder girdle.

Re-examination of the TMJ according to the Rocabado pain map revealed a decrease in the intensity of signs of the inflammatory process in all structures of the TMJ (Table 2): painfulness in zone 1 in GR1 was detected 15.2% less often, in GR2 – by 37.5%, in zone 2 – respectively by 18.2% and 43.8%, in zone 3 – by 21.2% and 46.9%, in zone 4 – by 15.2% and 37.5%, in zone 5 – by 27.3% and by 56.3%, in zone 6 – by 18.2% and by 53.1%; in zone 7 – by 21.2% and 46.9%, in zone 8 – by 24.2% and 46.9%.

Therapeutic exercises, functional training against the background of improved function led to an improvement in masticatory muscle strength according to MMT (Table 3). In no group of patients with GR2 were there any individuals with their grade “NF”; most all tests showed an “F” result. The dynamics of GR1 indicators were not so pronounced; the results of “WF” were determined among its representatives; results «no movement» (0) were not detected.

**Discussion.** Patients with a TMJ dysfunction most often go to the dentist and complain of pain and restrictions when opening and closing the mouth, noise phenomena in the TMJ area. In the available literature, there is not enough information about the changes that occur in the musculoskeletal system in TMJ pain dysfunction syndrome, since the study of the state of organs and body systems in dental practice is usually not carried out, and specialists of related specialties do not have enough tools in their arsenal for the objective diagnosis of this type of dysfunction [1; 3; 4]. All this determines the need to develop new, more effective methods that provide an interdisciplinary approach to the diagnosis and treatment of this contingent of patients, which is necessary to achieve a positive result.

The main method of treatment of patients with this pathology is the manufacture of a

separating mouthpiece. However, many patients do not get the proper effect after treatment, and if they do, they often face a relapse later [12; 14]. The lack of effect from treatment and the stability of the obtained result can be explained by the presence of extraocclusal factors, which can be the causes of TMJ dysfunction syndrome and prevent the correct determination of the position of the lower jaw due to myofascial disorders [15]. In addition, the increased level of psycho-emotional anxiety and local disorders in the tissues of the musculoskeletal system not only of the maxillofacial system, but also of the cervical collar zone and the back are symptoms of the fact that TMJ pain dysfunction syndrome is interdisciplinary in nature [7; 15].

To increase the effectiveness of treatment and the stability of the obtained result, many methods of treatment of patients with pain dysfunction syndrome of the temporomandibular joint have been proposed [1; 4]. However, the issues of rehabilitation of patients with the consequences of this syndrome have not been sufficiently studied. In this regard, it is necessary to pay special attention to the development of modern, more effective methods of non-pharmacological correction of this disease, which allows to eliminate the influence of extraocclusal factors on the maxillofacial system, simultaneously with dental treatment, increasing its effectiveness [3; 15]. Our study complements works, that describe the features of correction of dental dysfunctions by means of physical therapy [1; 7; 11].

### **Conclusions.**

1. In patients with temporomandibular joint dysfunction, signs of myofascial disorders were determined by the type of myofascial changes in the area of the masticatory muscles, neck and cervical spine, which was supported by the results of palpation of the corresponding muscles, the results of measuring the chin-chest distance, ear-shoulder, examination according to the Rocabado pain map, manual muscle testing.

2. The complex physical therapy program demonstrated a statistically significantly better effect ( $p < 0.05$ ) on the studied indicators of myofascial dysfunction compared to the initial data, which demonstrates its effectiveness and

confirms the need for specialized rehabilitation in patients with temporomandibular joint dysfunction.

3. A group of patients undergoing rehabilitation using passive splint therapy did not demonstrate an effect on myofascial dysfunction indicators; the achieved improvement according to the studied parameters of the orofacial zone were statistically significantly worse than the obtained indicators of the developed and implemented physical therapy program.

4. Means of physical therapy improve the effectiveness of dental orthopedic interventions, therefore, it is advisable to use them to increase the effectiveness of correction, reduce the severity of pathological signs, and improve functioning in patients with painful dysfunction of the temporomandibular joint.

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