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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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SOMATIC DYSFUNCTIONS IN THE MODELING OF OCCLUSAL AND EXTRAOCCLUSAL DISORDERS

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Abstract.

Introduction: Due to the growing development of interdisciplinary collaboration between dentists and osteopaths, the study of somatic dysfunctions, as the primary target of osteopathic treatment, is becoming increasingly relevant. An increasing number of studies highlight the differing impacts of occlusal and extraocclusal disorders on the function of the temporomandibular joint and mandibular biomechanics. However, there is a lack of research analyzing the correlation between somatic dysfunctions and these disorders. Such analysis is essential for planning and evaluating the effectiveness of combined dental and osteopathic treatment. Therefore, this issue undoubtedly requires further investigation and analysis.

This article continues previously initiated research, focusing on the impact of these disorders on the patterns of somatic dysfunction, as well as their potential clinical significance. The objective of the present study was to investigate the structure and severity of somatic dysfunctions associated with simulated occlusal and extraocclusal disturbances.

Materials and Methods: The study was conducted in three stages between November 2023 and January 2024. It included 20 healthy volunteers (10 men and 10 women) aged 20 to 40 years with no active somatic complaints. All participants underwent dental and osteopathic examinations, followed by simulation of occlusal and extraocclusal disorders.

Occlusal disorders were simulated by placing temporary overlays on the 1st and 6th molars to increase vertical jaw separation. Extraocclusal disorders were modeled by placing a pad under the left ischial tuberosity to create pelvic asymmetry and induce an ascending extraocclusal disturbance.

Results: The presence of occlusal and extraocclusal disorders significantly influenced the severity and manifestation of somatic dysfunctions: in volunteers, the somatic dysfunction scores increased significantly ($p < 0.001$). A clear association was also observed between the simulation of occlusal disorders and the development of global postural imbalances.

Conclusion: The results indicate that both occlusal and extraocclusal disorders have a substantial impact on somatic dysfunctions, aggravating existing conditions and contributing to the development of new dysfunctions.

Key words. Osteopathy, dentistry, somatic dysfunction, temporomandibular joint dysfunction, extraocclusal disturbances, occlusal disturbances, postural balance.

Introduction.

Somatic dysfunction (SD), as the primary focus of osteopathic diagnosis and correction, is increasingly being explored in the scientific literature [1,2]. According to methodological guidelines, SD may not coincide with the site of clinical disease manifestation, yet it represents a significant and potentially reversible component of the structural and functional impairments that contribute to the development of pathology [3].

Analyzing the relationship between SD and various diseases can provide new insights into their etiopathogenesis [4]. For instance, SDs located outside the stomatognathic system that affect the function of the temporomandibular joint (TMJ) are described in the literature as "extraocclusal" and are classified into a separate group [5]. Conversely, "occlusal" disturbances are those in which malocclusions or dentofacial anomalies result in SDs beyond the stomatognathic system [6,7].

The stomatognathic system comprises various anatomical structures, including the temporomandibular joint, maxilla and mandible, muscles, and tendons. Owing to their complex movements across multiple orthogonal planes, numerous axes of motion, and synergistic interactions, these components form a functional and dynamic unit [8].

Temporomandibular joint dysfunction (TMJD) of varying severity is observed in 16–59% of the adult population [9]. Therefore, identifying the relationship between TMJD and SD is essential for the planning and evaluation of both dental and osteopathic treatment.

The present article is a continuation of a previous study [10] investigating the influence of occlusal and extraocclusal disturbances on mandibular biomechanics and postural regulation. That study demonstrated that such disturbances alter mandibular biomechanics and induce compensatory adaptive movements aimed at preserving postural balance. These findings led us to hypothesize that the connection between SD and both occlusal and extraocclusal disturbances has significant clinical implications.

The objective of the present study was to investigate the structure and severity of somatic dysfunctions associated with the simulation of occlusal and extraocclusal disturbances.

Materials and Methods.

Study design and Duration: The study was conducted from November 2023 to January 2024. The first stage,

which involved a dental examination, was performed at the Department of Therapeutic Dentistry of RUDN University (Peoples' Friendship University of Russia) and the Dilos Medical Center. The second stage, comprising an osteopathic examination, and the third stage—the simulation of occlusal and extraocclusal disturbances—were carried out at the Tair Group Medical Facility.

This was an experimental, observational study involving the simulation of occlusal and extraocclusal disturbances in healthy volunteers.

Participants and Screening:

Twenty healthy adult volunteers (10 men and 10 women), aged 20 to 40 years, who were undergoing routine dental check-ups, were enrolled in the study. All participants underwent comprehensive evaluations by both a dentist and an osteopathic physician to exclude the presence of any occlusal or extraocclusal disturbances.

The dental assessment included the "Hamburg Short Test", which was used to screen for temporomandibular joint dysfunction (TMJD). The osteopathic examination followed a standardized protocol-based evaluation to identify and exclude extraocclusal disorders [10].

Inclusion criteria required the presence of orthognathic occlusion confirmed on clinical examination, absence of active somatic complaints, a score of 0 to 1 on the Hamburg Short Test for TMJD screening, and the absence of extraocclusal dysfunction identified via standardized osteopathic evaluation.

Exclusion criteria included the presence of malocclusion or a clinical diagnosis of TMJD, ongoing orthodontic or dental treatment, or any extraocclusal dysfunction observed during initial screening.

Intervention Description:

Following initial dental and osteopathic assessments, participants underwent video analysis of mandibular opening and closing movements under three conditions: baseline (pre-simulation), after simulation of occlusal disturbance, and after simulation of extraocclusal disturbance [10].

Extraocclusal disturbances were simulated by placing a 3 cm pad under the participant's left ischial tuberosity (seated position), creating pelvic asymmetry and an ascending extraocclusal disturbance. Participants remained in this posture for approximately five minutes to allow for postural system adaptation, after which an osteopathic evaluation was performed according to established guidelines [3].

Occlusal disturbances were simulated by attaching a temporary 1 mm overlay to the right first molar (tooth #16), inducing posterior disocclusion. Participants remained in this condition for five minutes before undergoing a subsequent osteopathic assessment following the same protocol.

Each participant underwent three osteopathic examinations: at baseline, during extraocclusal disturbance simulation, and during occlusal disturbance simulation. An intermediate osteopathic screening was performed between simulations to rule out any adverse effects.

Study Outcomes and Measurement:

The primary outcome was the structure and severity of somatic dysfunction (SD), assessed using a standardized osteopathic scoring method. For statistical analysis, severity scores were summed across anatomical regions, and a three-level categorization was applied: none/mild (scores 0–1), moderate (score 2), and severe (score 3). Comparisons were made across three time points: baseline, after occlusal disturbance simulation, and after extraocclusal disturbance simulation.

Statistical Analysis:

Statistical analysis was performed using StatTech v.4.6.3 (StatTech LLC, Russia).

- Quantitative variables not normally distributed were presented as medians (Me) with interquartile ranges (Q1–Q3).
- Categorical data were presented as absolute values and percentages.
- The Mann–Whitney U test was used for between-group comparisons of non-normally distributed quantitative variables.
- Pearson's chi-squared test was applied to compare proportions in multi-field contingency tables.
- The Wilcoxon signed-rank test was used for comparing paired samples with non-normal distributions.
- Differences were considered statistically significant at $p < 0.05$.

Ethical considerations:

The study was conducted in accordance with the Declaration of Helsinki's ethical principles for medical research involving human subjects. Written informed consent was obtained from all participants prior to their inclusion in the study.

Results.

Prior to the third stage of the study, all participants underwent an osteopathic evaluation to identify the dominant somatic dysfunction (Table 1). Statistical analysis showed no significant differences in the distribution of dominant somatic dysfunctions between male and female participants ($p = 0.480$). The most frequently observed dysfunctions were located in the thoracic region, lumbar spine, and pelvic area, while somatic dysfunctions of the cervical region and temporomandibular area were the least common.

Table 1. *Structure of Dominant Somatic Dysfunctions in Healthy Volunteers.*

Dominant Somatic Dysfunction	n	%
Thoracic region	7	35
Lumbar region	6	30
Pelvic region	5	25
TMJ region	1	5
Cervical region	1	5

After the simulation of occlusal and extra-occlusal disturbances, the structure of somatic dysfunctions was evaluated (Table 2). The somatic dysfunctions observed in both simulation scenarios were identical in terms of severity and anatomical location. A statistically significant increase in dysfunction severity was found in the lumbar region (visceral origin) ($p = 0.05$). Although deterioration was noted in other regions, these changes did not reach statistical significance, likely due to the limited sample size.

After the simulation of occlusal disturbances, 15% of participants exhibited mild (1-point) global postural

Table 2. *Severity of Somatic Dysfunctions During Osteopathic Examination Before and After Simulation of Occlusal and Extra-Occlusal Disturbances.*

Region	Type	Score 0 (Before), n (%)	Score 1 (Before), n (%)	Score 2 (Before), n (%)	Score 0 (After Occlusion), n (%)	Score 1 (After Occlusion), n (%)	Score 2 (After Occlusion), n (%)	Score 0 (After Extra-Occlusion), n (%)	Score 1 (After Extra-Occlusion), n (%)	Score 2 (After Extra-Occlusion), n (%)	p-value
Dura mater		19 (95%)	1 (5%)	0 (0%)	19 (95%)	0 (0%)	1 (5%)	19 (95%)	0 (0%)	1 (5%)	0.36
Cervical	Somatic	20 (100%)	0 (0%)	0 (0%)	19 (95%)	1 (5%)	0 (0%)	19 (95%)	1 (5%)	0 (0%)	1.0
Thoracic	Somatic	16 (80%)	3 (15%)	1 (5%)	15 (75%)	1 (5%)	4 (20%)	15 (75%)	1 (5%)	4 (20%)	0.24
Thoracic	Visceral	17 (85%)	2 (10%)	1 (5%)	17 (85%)	0 (0%)	0 (0%)	17 (85%)	0 (0%)	0 (0%)	0.22
Lumbar	Somatic	17 (85%)	2 (10%)	1 (5%)	17 (85%)	0 (0%)	3 (15%)	17 (85%)	0 (0%)	3 (15%)	0.22
Lumbar	Visceral	17 (85%)	3 (15%)	0 (0%)	17 (85%)	0 (0%)	3 (15%)	17 (85%)	0 (0%)	3 (15%)	0.05
Pelvic	Somatic	17 (85%)	3 (15%)	0 (0%)	17 (85%)	2 (10%)	1 (5%)	17 (85%)	2 (10%)	1 (5%)	0.54
Pelvic	Visceral	18 (90%)	2 (10%)	0 (0%)	18 (90%)	0 (0%)	2 (10%)	18 (90%)	0 (0%)	2 (10%)	0.13

Table 3. *Analysis of Somatic Dysfunction Dynamics (in Points).*

Somatic Dysfunction, points	Me	Q1–Q3	W	df	Wilcoxon Test
Before Modeling (n=20)	1.0	1.00 – 1.00	0×10^0	–	
After Modeling (n=20)	2.0	2.00 – 2.00			$p < 0.001$*

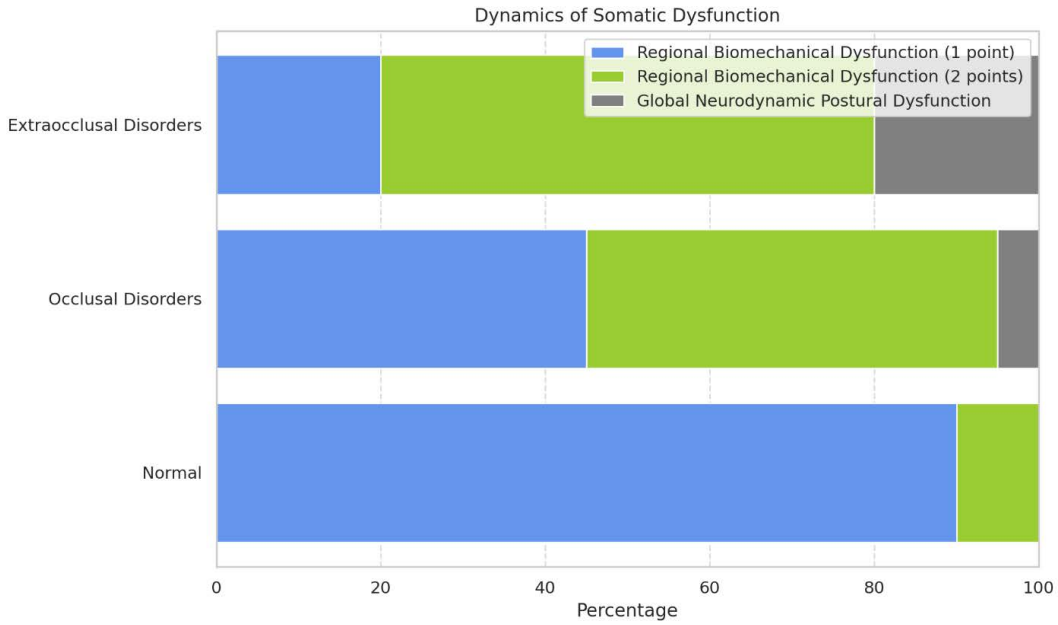

Figure 1. *Structure of Somatic Dysfunctions under Occlusal and Extraocclusal Modeling.*

dysfunctions ($p = 0.231$). These results were not statistically significant, likely due to the small sample size.

An analysis of somatic dysfunction dynamics was performed (Table 3). All participants showed a statistically significant increase in somatic dysfunction scores during the simulation phase ($p < 0.001$) (Figure 1).

Discussion.

Before modelling occlusal and extraocclusal disturbances, one dominant somatic dysfunction (SD) with a severity of no more than 1 point was identified in 17 healthy volunteers who did not report any active complaints. After simulating both types of disturbances, the severity of SD in these same regions increased to 2 points, indicating a negative impact of the modelled occlusal and extraocclusal influences on pre-existing SDs.

Three additional volunteers initially presented with somatic dysfunctions graded at 2 points. Although the severity of these SDs did not change after modelling, new somatic dysfunctions appeared in each case, with a severity of no more than 1 point. Furthermore, global postural dysfunctions were recorded in all three participants following the simulation of occlusal disturbances. This finding further confirms the relationship between interference with the postural sensor function of the dentoalveolar system and the emergence of global postural imbalances [11-14].

Shkarin et al. (2024) identified muscle, joint, and jaw-related occlusal factors as key contributors to temporomandibular joint (TMJ) dysfunction, emphasizing their connection with somatic imbalances. Using advanced tools such as 3D modelling and electromyography, they confirmed that disruptions in occlusion often coincide with broader musculoskeletal disturbances [15]. Osokin et al. (2024) conducted a pilot study showing that postural deviations—such as shifts in the center of gravity and asymmetry in body alignment—improve during the course of occlusal reconstruction, suggesting that restoration of occlusal balance positively affects postural stability [16].

The deterioration in osteopathic status observed during the modelling of occlusal and extraocclusal disturbances was transient. All identified somatic dysfunctions regressed after the experimental procedures, and no lasting adverse effects were reported.

Conclusion.

The presence of occlusal and extraocclusal disturbances alters the structure and severity of dominant somatic dysfunctions. In participants with pre-existing SDs, severity increased, while in those with more severe baseline SDs (2 points), additional dysfunctions developed. The study also indicates a potential link between experimentally induced occlusal disturbances—through interference with the postural sensor function of the jaw system—and the development of global postural dysfunctions.

These findings demonstrate that both occlusal and extraocclusal disturbances significantly affect the degree and manifestation of somatic dysfunctions. This knowledge may enhance understanding of the role of SDs in the pathogenesis of temporomandibular joint disorders (TMJDs). Further research involving larger cohorts and patients with various pathologies is warranted to validate and expand upon these results.

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