ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

UDC: 616.839-008:616.314-008:618.6:615.8

PHYSICAL THERAPY FOR THE CORRECTION OF AUTONOMIC DYSFUNCTION IN WOMEN WITH SLEEP BRUXISM DURING THE POSTPARTUM PERIOD

Aravitska M.H., Lapkovskyi E.Y., Sheremeta L.M., Oleksiuk L.I., Kakhno I.V.

Vasyl Stefanyk Carpathian National University, Ivano-Frankivsk, Ukraine

Background. Physical therapy may improve autonomic regulation and indirectly reduce bruxism-associated symptoms in postpartum women.

Aim. To evaluate the effectiveness of physical therapy in women with sleep bruxism during the postpartum period by assessing changes in autonomic dysfunction parameters.

Materials and Methods. The study included 36 women ([26.0±1.1] years; up to eight weeks postpartum) with sleep bruxism managed using an individualized occlusal splint. The Control Group (*n*=17) received general recommendations for postpartum recovery. The Experimental Group (*n*=19) completed a four-week physical therapy program consisting of daily 60-minute sessions, including aerobic and breathing exercises, manual and orofacial interventions, and self-massage. Outcomes were assessed using the Wayne Autonomic Symptom Questionnaire, Kerdo Index, isometric handgrip test, and 24-hour heart rate variability monitoring. Between-group and within-group comparisons were performed using the independent samples and paired Student's *t*-tests, respectively, in "SPSS" 26.0 (IBM, USA). The study was conducted as part of the research project "Improvement of Functional Status, Quality of Life, and Correction of Pathological Conditions of Various Origins by Means of Therapy and Rehabilitation" (2023–2026) at Vasyl Stefanyk Carpathian National University, state registration No.0123U101534.

Research Ethics. The study complied with the principles of the World Medical Association Declaration of Helsinki (1964–2024). Informed consent was obtained from all participants, and the study protocol was approved by the institutional bioethics committee.

Results. The total Wayne Autonomic Symptom Questionnaire score decreased by 55.5% in the Experimental Group compared with 21.2% in the Control Group. The Kerdo Index decreased from [2.27±0.09] to [1.33±0.12] in the Experimental Group and from [2.35±0.11] to [1.83±0.15] in the Control Group. In the Experimental Group, low-frequency power decreased by 34.2%, high-frequency power increased by 25.5%, the ratio decreased by 47.5%, and the Baevsky Stress Index decreased by 53.1%.

Conclusions. The physical therapy program resulted in statistically significant improvements in autonomic regulation and reductions in subjective manifestations of autonomic dysfunction compared with the use of an occlusal splint during physiological postpartum recovery.

Keywords: *rehabilitation, dentistry, obstetrics and gynecology, autonomic dysregulation, autonomic nervous system.*

Відповідальний автор: Аравіцька М.Г.
✉ 57, вул. Шевченка, м. Івано-Франківськ, 76018, Україна.
E-mail: ifrehabplus@gmail.com

Corresponding author: Aravitska M.H.
✉ 57, Shevchenko str., Ivano-Frankivsk, 76018, Ukraine.
E-mail: ifrehabplus@gmail.com

© Аравіцька М.Г., Лапковський Е.Й., Шеремета Л.М., Олексюк Л.І., Кахно І.В., 2026

CC BY-NC-SA

© Aravitska M.H., Lapkovskyi E.Y., Sheremeta L.M., Oleksiuk L.I., Kakhno I.V., 2026

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

Цитуйте українською: Аравіцька МГ, Лапковський ЕЙ, Шеремета ЛМ, Олексюк ЛІ, Кахно ІВ. Корекція ознак вегетативної дисфункції засобами фізичної терапії у жінок з бруксизмом сну у післяпологовому періоді. Медицина сьогодні і завтра. 2026;95(3):11с. In press. https://doi.org/10.35339/msz.2026.95.3.als [Англійською].

Cite in English: Aravitska MH, Lapkovskyi EY, Sheremeta LM, Oleksiuk LI, Kakhno IV. Physical therapy for the correction of autonomic dysfunction in women with sleep bruxism during the postpartum period. Medicine Today and Tomorrow. 2026;95(3):11p. In press. https://doi.org/10.35339/msz.2026.95.3.als

Introduction

The postpartum period is characterized by profound neuroendocrine changes, sleep fragmentation, cumulative sleep deprivation, and increased psychological stress. Collectively, these factors create a predisposition to Autonomic Nervous System (ANS) imbalance, contributing to the onset or exacerbation of other somatoform dysfunctions and parafunctional conditions, particularly sleep bruxism. Systematic reviews have demonstrated that women during the postpartum period experience impaired sleep quality, which is associated with poorer physical and mental health outcomes, indirectly indicating autonomic dysregulation during this stage of recovery [1; 2].

Bruxism is currently defined as repetitive masticatory muscle activity characterized by clenching and/or grinding of the teeth and is classified into two distinct subtypes: awake bruxism and sleep bruxism. A key pathophysiological mechanism underlying sleep bruxism involves sleep micro-arousals accompanied by transient sympathetic activation and a temporary reduction in vagal activity. These autonomic surges precede episodes of rhythmic masticatory muscle activity and have been consistently demonstrated in polysomnographic studies [3; 4].

Sleep disturbances are highly prevalent among women during the postpartum period. Meta-analyses have demonstrated a high prevalence of poor sleep quality in the first months following childbirth, creating a physiological background for more frequent sleep micro-arousals and increased nocturnal autonomic hyperarousal [1; 3]. In postpartum women, Heart Rate Variability (HRV) has been shown to be closely associated with maternal psychological well-being. Reduced HRV correlates with higher levels of depressive and anxiety symptoms, highlighting the critical role of autonomic regulation in postpartum adaptation and, potentially, in the pathophysiology of sleep bruxism through its relationship with sleep micro-arousals [2]. In this context, the international consensus report by Verhoeff M.C. et al. (2025) [5] emphasizes the importance of distinguishing sleep bruxism from its potential clinical consequences and associated conditions, thereby providing a conceptual framework for investigating its relationship with autonomic dysfunction.

Within this context, physical therapy has emerged as a promising approach for the correction of autonomic dysfunction. Moderate-intensity aerobic and combined exercise programs have been shown to improve HRV and enhance cardiac autonomic regulation, thereby contributing to the restoration of autonomic balance [6]. Breathing interventions incorporating slow diaphragmatic breathing have likewise demonstrated increases in HRV and a shift toward greater vagal activity, potentially reducing the frequency of autonomic reactivations and improving sleep architecture [7; 8].

Psychological factors further contribute to the risk of bruxism. Systematic reviews have consistently reported associations between bruxism and stress, anxiety, and other psychological factors, particularly in awake bruxism, underscoring the biopsychosocial nature of this condition. Because anxiety disorders are common during the postpartum period, their potential contribution to ANS dysfunction and sleep bruxism warrants targeted therapeutic intervention [8].

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

From the perspective of managing sleep bruxism and stomatognathic dysfunctions in general, physical therapy interventions – including muscle relaxation techniques, manual therapy, therapeutic exercise, and biofeedback – have demonstrated effectiveness in reducing pain, improving masticatory muscle function, and enhancing temporomandibular joint function [9; 10]. When combined with autonomic-oriented interventions, such as aerobic exercise and breathing training, these approaches provide a strong rationale for the multidisciplinary management of sleep bruxism in postpartum women [11].

Epidemiological data on sleep bruxism specifically among postpartum women remain limited, although pregnancy itself has not been shown to adversely affect the course of bruxism [12]. In a large population-based survey of postpartum women, the prevalence of self-reported sleep bruxism was 3.6%, a finding that may reflect the unique physiological characteristics of the postpartum period – including lactation, sleep fragmentation, and hormonal fluctuations – as well as possible underreporting. By comparison, pooled estimates indicate that the global prevalence of sleep bruxism in the adult population is approximately 21.0% [13].

The combination of the high prevalence of sleep disturbances and anxiety symptoms during the postpartum period, the established role of sympathetic activation and sleep micro-arousals in triggering episodes of sleep bruxism, and the dynamic changes in maternal autonomic regulation provides a strong clinical rationale for targeted correction of autonomic dysfunction as a strategy to reduce the manifestations of sleep bruxism.

Physical therapy interventions have the potential to improve sleep quality, alleviate bruxism-related symptoms, and facilitate the safe restoration of functional capacity in women during the postpartum period. The present study was undertaken to investigate this clinical problem.

Aim of the study was to evaluate the effectiveness of physical therapy interventions in women with sleep bruxism during the postpartum period by assessing changes in indicators of autonomic dysfunction.

Materials and Methods

The study included 36 women with sleep bruxism, with a mean age of [26.0±1.1] years, who were in the late postpartum period (up to 8 weeks after childbirth).

No a priori sample size or statistical power calculation was performed. The study sample consisted of women who met the eligibility criteria and provided informed consent to participate during the predefined recruitment period. The study was designed as a pilot exploratory study aimed at the preliminary evaluation of the effectiveness of the developed physical therapy program.

The study had a prospective controlled non-randomized design. Participants were allocated to the study groups according to their willingness to participate in the four-week physical therapy program. Women who agreed to complete the supervised and home-based physical therapy intervention were assigned to the Experimental Group, whereas those who declined participation in the intervention but agreed to undergo all study assessments and receive general postpartum recommendations were assigned to the Control Group.

Inclusion criteria were: sleep bruxism diagnosed before pregnancy according to the established diagnostic criteria (self-report plus clinical examination) [5]; vaginal delivery; management of sleep bruxism using an individual occlusal splint (participants in both groups were instructed to wear the individual occlusal splint during sleep throughout the entire study period); the absence of acute disease or exacerbation of chronic somatic conditions at the time of enrollment.

Exclusion criteria were: awake bruxism; sleep bruxism diagnosed during pregnancy or the postpartum period; cesarean delivery; multiple pregnancy; a complicated postpartum period.

The Control Group (CG) consisted of 17 women who underwent routine postpartum recovery according to standard postpartum care recommendations.

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

The Experimental Group (EG) comprised 19 women who participated in a 4-week physical therapy program specifically developed for this study. The program included daily 60-minute rehabilitation sessions, with supervised sessions conducted three times per week at a rehabilitation center and home-based sessions performed independently on the remaining days.

Each supervised session consisted of two components. The first component (40 min) included aerobic therapeutic exercises, diaphragmatic breathing exercises, and spinal and joint stretching exercises aimed at reducing excessive sympathetic nervous system activity. The second component comprised therapeutic exercises and manual therapy interventions, including intraoral massage of the orofacial and cervical regions, to reduce myofascial dysfunction and excessive tone of the masticatory muscles associated with sleep bruxism. Home-based sessions consisted of repeating the therapeutic exercises learned during supervised sessions and performing self-massage of the facial and buccal regions.

The assessment protocol included the Wayne Autonomic Symptom Questionnaire for the evaluation of autonomic dysfunction (score <15 points: no autonomic dysfunction; 15–25 points: moderate autonomic dysfunction; >25 points: severe autonomic dysfunction). Functional tests assessing the balance between the sympathetic and parasympathetic divisions of the ANS included the isometric exercise test (based on changes in Diastolic Blood Pressure (DBP)), calculation of the Kerdo Index, and 24-hour HRV monitoring with spectral analysis. The analyzed HRV parameters comprised Low-Frequency (LF) power (0.04–0.15 Hz, ms²), High-Frequency (HF) power (0.15–0.40 Hz, ms²), the LF/HF ratio, and the Baevsky Stress Index.

Statistical analysis was performed using "SPSS" 26.0 (IBM, USA). Data distribution was assessed using the Shapiro–Wilk test. All variables demonstrated a normal distribution and are presented as Mean ± Standard Error of the Mean ($M \pm m$). Comparisons between the EG and the CG were performed using the independent samples Student's t-test, whereas within-group comparisons before and after the intervention were performed using the paired Student's *t*-test. Statistical significance was defined as a two-sided $p<0.05$. To descriptively assess the magnitude of changes in the investigated parameters, absolute changes in group mean values (Δ) were calculated as the difference between post-intervention and baseline means ($\Delta = M_{post} - M_{baseline}$). Between-group differences in mean changes were calculated as $\Delta_{EG} - \Delta_{CG}$.

Research Ethics

The study was conducted in accordance with the principles of the World Medical Association Declaration of Helsinki (1964–2024). Written informed consent was obtained from all participants before enrolment. The study protocol was approved by the Bioethics Committee of Vasyl Stefanyk Carpathian National University, Ivano-Frankivsk, Ukraine.

Results

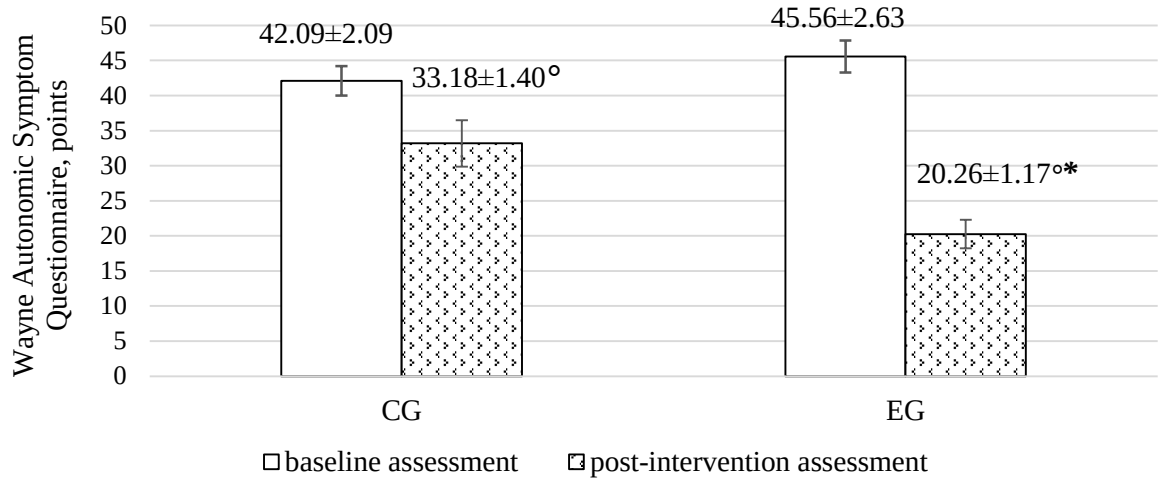
The postpartum period, characterized by substantial psychological and physical stress, pain, and the coexistence of sleep bruxism, was associated with exhaustion and impaired ANS function in both CG and EG.

At baseline, all participants exhibited signs of autonomic dysfunction according to the Wayne Autonomic Symptom Questionnaire (*Figure*). Based on the absolute questionnaire scores, the severity of autonomic dysfunction was classified as severe in both study groups.

The subjective manifestations of autonomic dysfunction reported by the participants were corroborated by the results of functional tests and instrumental assessments.

In both study groups, the increase in DBP during the isometric handgrip test exceeded the physiological adaptive response and reached values indicative of excessive sympathetic nervous system activation. Enhanced sympathetic activity was further confirmed by the Kerdo Index, which was elevated in both groups, reflecting sympathetic predominance of autonomic regulation (*Table 1*).

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua



Changes in autonomic dysfunction scores assessed by the Wayne Autonomic Symptom Questionnaire in women with sleep bruxism during the postpartum period following physical therapy intervention

Notes:

CG – Control Group;

EG – Experimental Group;

° – statistically significant difference between baseline and post-intervention assessments within the same group, p<0.05;

** – statistically significant difference between CG and EG, p<0.05.*

Table 1. Changes in the results of functional tests assessing autonomic nervous system function in women with sleep bruxism during the postpartum period following a physical therapy program (M±m)

Assessment Parameters	CG (*n*=17)		EG (*n*=19)	
	baseline assessments	post-intervention assessments	baseline assessments	post-intervention assessments
Kerdo Index	2.35±0.11	1.83±0.15°	2.27±0.09	1.33±0.12°*
Increase in DBP during the isometric handgrip test at 3 min, mmHg	9.52±0.36	12.51±0.20°	9.79±0.27	16.01±0.41°*

Notes:

M ± m – Mean ± Standard Error of the Mean;

CG – Control Group;

EG – Experimental Group;

DBP – Diastolic Blood Pressure;

° – statistically significant difference between baseline and post-intervention assessments within the same group, p<0.05;

** – statistically significant difference between CG and EG, p<0.05.*

Analysis of the 24-hour HRV recordings in women with sleep bruxism during the postpartum period demonstrated a predominance of the LF component, reflecting increased sympathetic nervous system activity (*Table 2*). In contrast, the HF component, which represents parasympathetic activity, exhibited an opposite pattern. An imbalance between the sympathetic and parasympathetic divisions of the ANS was further confirmed by the Baevsky Stress Index (*Table 2*).

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

Table 2. Changes in 24-hour heart rate variability parameters in women with sleep bruxism during the postpartum period following a physical therapy program (M±m)

Assessment Parameters	CG (*n*=17)		EG (*n*=19)	
	baseline assessments	post-intervention assessments	baseline assessments	post-intervention assessments
LF, ms^2	2,219.42±30.19	1,876.35±18.51°	2,351.30±36.41*	1,547.09±40.11°*
HF, ms^2	713.28±15.74	820.11±24.16°	730.19±31.08	916.19±20.12°*
LF/HF	3.11±0.15	2.29±0.17°	3.22±0.19	1.69±0.15°*
Baevsky Stress Index	160.18±10.18	127.12±14.15°	148.11±21.17	69.45±4.19°*

Notes:

M ± m – Mean ± Standard Error of the Mean;
CG – Control Group;
EG – Experimental Group;
LF – Low-Frequency;
HF – High-Frequency;
° – statistically significant difference between baseline and post-intervention assessments within the same group, p<0.05;
** – statistically significant difference between CG and EG, p<0.05.*

To assess the magnitude of changes in autonomic regulation parameters, absolute differences between post-intervention and baseline group mean values (Δ) were calculated. The analysis demonstrated greater changes in the EG compared with the CG across investigated parameters. The Kerdo Index decreased by 0.94 in the EG and by 0.52 in the CG, with a between-group difference in mean changes of −0.42. The increase in DBP during the isometric handgrip test improved by 6.22 mmHg in the EG compared with 2.99 mmHg in the CG, corresponding to a between-group difference of 3.23 mmHg.

Analysis of HRV parameters revealed a reduction in LF power by 804.21 ms² in the EG and by 343.07 ms² in the CG, with a between-group difference in mean changes of −461.14 ms². HF power increased by 186.00 ms² and 106.83 ms², respectively, corresponding to a between-group difference of 79.17 ms². The LF/HF ratio decreased by 1.53 in the EG and by 0.82 in the CG, with a between-group difference of −0.71. Similarly, the Baevsky Stress Index decreased by 78.66 in the EG and by 33.06 in the CG, corresponding to a between-group difference of −45.60.

These results indicate greater absolute changes in group mean values following the physical therapy program.

Discussion

At the post-intervention assessment, the implemented physical therapy program produced significantly greater normalization of autonomic tone, as assessed by the Wayne Autonomic Symptom Questionnaire, in women with sleep bruxism during the postpartum period than routine postpartum recovery (*Figure*). These findings are consistent with the current understanding of the pathophysiology of sleep bruxism, in which sleep micro-arousals accompanied by transient sympathetic activation play a central role. By reducing sympathetic reactivity and enhancing vagal activity, exercise-based interventions may decrease the frequency and/or intensity of bruxism episodes [3]. Moderate-intensity physical exercise has been shown to improve vagally mediated HRV indices while attenuating sympathetic predominance [14]. This provides a plausible biological explanation for the greater improvement in autonomic dysfunction observed in the EG. The substantially greater relative reduction in autonomic dysfunction scores in the EG (55.5%) compared with the CG (21.2%) is both methodologically and biologically plausible and is consistent with the current evidence supporting the beneficial effects of physical activity and autonomic-oriented breathing interventions on ANS balance during the perinatal period.

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

According to the interpretation of the Kerdo Index, the greater reduction observed in the EG indicated a more pronounced shift from sympathetic predominance toward autonomic balance (*Table 1*). During the isometric handgrip test, the increase in DBP at the third minute increased by 31.4% in the CG ($p<0.05$) and by 63.5% in the EG ($p<0.05$). According to the classical Ewing criteria, a DBP increase of ≥16 mmHg is considered normal, 11–15 mmHg is considered borderline, and ≤10 mmHg indicates an abnormal response. Accordingly, participants in the EG achieved values within the normal range, whereas those in the CG remained within the borderline range. These findings indicate a more complete restoration of sympathetic cardiovascular reactivity following the physical therapy intervention.

HRV monitoring demonstrated a modest shift toward autonomic balance in the CG, as evidenced by a 26.4% reduction in the LF/HF ratio and a 20.6% decrease in the Baevsky Stress Index (*Table 2*). In contrast, the EG, which completed the physical therapy program, exhibited substantially greater improvements: LF power decreased by 34.2%, HF power increased by 25.5%, the LF/HF ratio decreased by 47.5%, and the Baevsky Stress Index declined by 53.1% (all $p<0.05$). At the post-intervention assessment, the EG demonstrated significantly lower LF power, LF/HF ratio, and Baevsky Stress Index, together with significantly higher HF power, than the CG ($p<0.05$), indicating the superiority of the implemented physical therapy intervention in restoring autonomic balance.

One of the limitations of this study was the statistically significant difference in baseline LF values between the groups, indicating incomplete baseline comparability with respect to this parameter. This difference, likely associated with the non-randomized allocation of participants, may have influenced the interpretation of the intervention effects. Therefore, the findings should be interpreted with consideration of this limitation.

The postpartum context is essential for interpreting the clinical significance of the present findings. Systematic reviews and network meta-analyses have demonstrated a high prevalence of poor sleep quality during the first months after childbirth and have highlighted the beneficial effects of non-pharmacological interventions, including physical therapy, as part of autonomic-oriented rehabilitation strategies. Our findings are consistent with this evidence [13].

Studies conducted during the postpartum period have shown that reduced HRV is associated with poorer maternal psychological well-being. Maternal HRV at three months postpartum has been linked to the severity of anxiety and depressive symptoms, as well as to infant neurophysiological outcomes. These observations underscore both the physiological and psychological benefits of the proposed physical therapy intervention [2].

Psychological factors also play an important role in the pathophysiology of bruxism. Systematic reviews have consistently demonstrated associations between bruxism, stress, and anxiety, emphasizing its multifactorial etiology and the need for a multidisciplinary management approach [8].

Conclusions

1. Women with sleep bruxism in the late postpartum period exhibited baseline signs of autonomic dysfunction characterized by sympathetic predominance. This was evidenced by Wayne Autonomic Symptom Questionnaire scores corresponding to severe autonomic dysfunction, a positive Kerdo Index, an increase in diastolic blood pressure of less than 10 mmHg during the isometric handgrip test, and a marked predominance of the low-frequency component on 24-hour heart rate variability analysis.

2. The physical therapy program resulted in significantly greater normalization of autonomic regulation than routine postpartum recovery ($p<0.05$ between groups). In the Experimental Group, the total score on the Wayne Autonomic Symptom Questionnaire decreased by 55.5%, compared with 21.2% in the Control Group ($p<0.05$). The Kerdo Index also decreased in the Experimental Group, while the increase in diastolic blood pressure during the isometric handgrip

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

test improved by 63.5%, returning to the normal physiological range, compared with 31.4% in the Control Group. Twenty-four-hour heart rate variability monitoring further confirmed restoration of sympathovagal balance following physical therapy, with the Experimental Group demonstrating significantly lower low-frequency power, low-frequency to high-frequency power ratio, and Baevsky Stress Index, together with significantly higher high-frequency power at the post-intervention assessment ($p<0.05$).

3. The developed 4-week physical therapy program proved to be an effective intervention for correcting signs of autonomic dysfunction in women with sleep bruxism during the postpartum period. These findings support its inclusion in multidisciplinary postpartum rehabilitation protocols for women with comorbid conditions.

Declarations

Conflict of interest is absent.

All authors have agreed to the publication of the article under the terms of the Creative Commons BY-NC-SA 4.0 licence and of the public agreement with Kharkiv National Medical University as the founder and publisher of the journal, and to the processing and publication of their personal data.

The authors of the manuscript declare that in the process of conducting research, preparing, and editing this manuscript, they did not use any generative artificial intelligence tools or services to perform any of the tasks listed in the Generative Artificial Intelligence Delegation Taxonomy (GAIDeT, 2025). All stages of the work (from the development of the research concept to the final editing) were performed without the involvement of generative artificial intelligence, exclusively by the authors.

Funding and Acknowledgments

The study was conducted as part of the research project "Improvement of Functional Status, Quality of Life, and Correction of Pathological Conditions of Various Origins by Means of Therapy and Rehabilitation" (2023–2026) at Vasyl Stefanyk Carpathian National University, state registration No.0123U101534.

Authors' Contributions

Contribution / Authors	A	B	C	D	E	F
Aravitska M.H.	+	+				+
Lapkovskyi E.Y.		+	+			+
Sheremeta L.M.		+	+			+
Oleksiuk L.I.				+	+	+
Kakhno I.V.				+	+	+

Notes:

A – concept;
B – design;
C – data collection;
D – statistical processing and interpretation of data;
E – writing or critical editing of the article;
F – approval of the final version for publication and agreement to be responsible for all aspects of the work.

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

References

1. Yang Y, Li W, Ma TJ, Zhang L, Hall BJ, Ungvari GS, Xiang YT. Prevalence of Poor Sleep Quality in Perinatal and Postnatal Women: A Comprehensive Meta-Analysis of Observational Studies. Front Psychiatry. 2020;11:161. DOI: 10.3389/fpsyt.2020.00161. PMID: 32231599.

2. Brandes-Aitken A, Hume A, Braren S, Werchan D, Zhang M, Brito NH. Maternal heart rate variability at 3-months postpartum is associated with maternal mental health and infant neurophysiology. Sci Rep. 2024;14(1):18766. DOI: 10.1038/s41598-024-68398-4. PMID: 39138268.

3. Huynh N, Kato T, Rompré PH, Okura K, Saber M, Lanfranchi PA, et al. Sleep bruxism is associated to micro-arousals and an increase in cardiac sympathetic activity. J Sleep Res. 2006;15(3):339-46. DOI: 10.1111/j.1365-2869.2006.00536.x. PMID: 16911037.

4. Khan-Afridi Z, Ruchat SM, Jones PAT, Ali MU, Matenchuk BA, Leonard S, et al. Impact of sleep on postpartum health outcomes: a systematic review and meta-analysis. Br J Sports Med. 2025;59(8):584-93. DOI: 10.1136/bjsports-2024-109604. PMID: 40011016.

5. Verhoeff MC, Lobbezoo F, Ahlberg J, Bender S, Bracci A, Colonna A, et al. Updating the Bruxism Definitions: Report of an International Consensus Meeting. J Oral Rehabil. 2025;52(9):1335-42. DOI: 10.1111/joor.13985. PMID: 40312776.

6. Grässler B, Thielmann B, Böckelmann I, Hökelmann A. Effects of Different Training Interventions on Heart Rate Variability and Cardiovascular Health and Risk Factors in Young and Middle-Aged Adults: A Systematic Review. Front Physiol. 2021;12:657274. DOI: 10.3389/fphys.2021.657274. PMID: 33981251.

7. Russell ME, Scott AB, Boggero IA, Carlson CR. Inclusion of a rest period in diaphragmatic breathing increases high frequency heart rate variability: Implications for behavioral therapy. Psychophysiology. 2017;54(3):358-65. DOI: 10.1111/psyp.12791. PMID: 27925652.

8. Manfredini D, Lobbezoo F. Role of psychosocial factors in the etiology of bruxism. J Orofac Pain. 2009;23(2):153-66. PMID: 19492540. Available at: https://files.jofph.com/files/article/20231226-780/pdf/jop_23_2_Manfredini_8.pdf

9. Sayenko OV, Aravitska MH. Indicators of the functional capacity of the tissues of the maxillo-facial region, the psychoemotional state and the quality of life of patients with the consequences of the mandibular fracture under the influence of physical therapy. Rehabilitation and Recreation. 2024;18(3):51-60. DOI: 10.32782/2522-1795.2024.18.3.5.

10. Sayenko OV, Aravitska MH. [Dynamics of post-immobilization functional limitations of the orofacial zone in patients after a fracture of the lower jaw under the influence of rehabilitation agents]. Art of Medicine. 2023;4(28):115-20. DOI: 10.21802/artm.2023.4.28.115. [In Ukrainian].

11. Amorim CSM, Espirito Santo AS, Sommer M, Marques AP. Effect of Physical Therapy in Bruxism Treatment: A Systematic Review. J Manipulative Physiol Ther. 2018;41(5):389-404. DOI: 10.1016/j.jmpt.2017.10.014. PMID: 30041736.

12. LeResche L, Sherman JJ, Huggins K, Saunders K, Mancl LA, Lentz G, Dworkin SF. Musculoskeletal orofacial pain and other signs and symptoms of temporomandibular disorders during pregnancy: a prospective study. J Orofac Pain. 2005;19(3):193-201. DOI: 10.11607/jofph.19193. PMID: 16106712.

13. de Holanda TA, Marmitt LP, Cesar JA, Svensson P, Boscato N. Sleep Bruxism in Puerperal Women: Data from a Population-Based Survey. Matern Child Health J. 2023;27(2):262-71. DOI: 10.1007/s10995-022-03576-2. PMID: 36576597.

14. Amekran Y, El Hangouche AJ. Effects of Exercise Training on Heart Rate Variability in Healthy Adults: A Systematic Review and Meta-analysis of Randomized Controlled Trials. Cureus. 2024;16(6):e62465. DOI: 10.7759/cureus.62465. PMID: 39015867.

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

Аравіцька М.Г., Лапковський Е.Й., Шеремета Л.М., Олексюк Л.І., Кахно І.В.

КОРЕКЦІЯ ОЗНАК ВЕГЕТАТИВНОЇ ДИСФУНКЦІЇ ЗАСОБАМИ ФІЗИЧНОЇ ТЕРАПІЇ У ЖІНОК З БРУКСИЗМОМ СНУ У ПІСЛЯПОЛОГОВОМУ ПЕРІОДІ

Актуальність. Фізична терапія може поліпшувати вегетативну регуляцію та опосередковано зменшувати пов'язані з бруксизмом симптоми у жінок у післяпологовому періоді.

Мета. Оцінити ефективність фізичної терапії у жінок з бруксизмом сну в післяпологовому періоді за динамікою показників вегетативної дисфункції.

Матеріали та методи. У дослідженні взяли участь 36 жінок ([26,0±1,1] років; до восьми тижнів після пологів) з бруксизмом сну, для корекції якого використовували індивідуальну оклюзійну капу. Контрольна група (*n*=17) отримувала загальні рекомендації щодо післяпологового відновлення. Експериментальна група (*n*=19) виконувала чотиритижневу програму фізичної терапії, що складалася зі щоденних 60-хвилинних занять і включала аеробні та дихальні вправи, мануальні й орофаціальні втручання, а також самомасаж. Результати оцінювали за опитувальником вегетативних симптомів Вейна, індексом Кердо, ізометричною пробою зі стисканням кистьового динамометра та добовим моніторуванням варіабельності серцевого ритму. Міжгрупові та внутрішньогрупові порівняння виконано за *t*-критерієм Стьюдента для незалежних і зв'язаних вибірок з використанням SPSS 26.0 (IBM, США). Робота є фрагментом науково-дослідної теми Карпатського національного університету імені Василя Стефаника «Покращення функціонального стану, якості життя та корекція патологічних станів різного походження засобами терапії та реабілітації» (2023–2026), № державної реєстрації 0123U101534.

Етика дослідження. Дослідження відповідало принципам Гельсінської декларації Всесвітньої медичної асоціації (1964–2024). Від усіх учасниць отримано інформовану згоду, протокол дослідження схвалено комісією з біоетики установи.

Результати. Сумарний бал за опитувальником вегетативних симптомів Вейна знизився на 55,5 % в експериментальній групі проти 21,2 % у контрольній. Індекс Кердо зменшився з [2,27±0,09] до [1,33±0,12] в експериментальній групі та з [2,35±0,11] до [1,83±0,15] у контрольній. В експериментальній групі потужність низькочастотного компонента знизилася на 34,2 %, потужність високочастотного компонента зросла на 25,5 %, їхнє співвідношення зменшилося на 47,5 %, а стрес-індекс Баєвського – на 53,1 %.

Висновки. Програма фізичної терапії забезпечила статистично значуще поліпшення вегетативної регуляції та зменшення суб'єктивних проявів вегетативної дисфункції порівняно із застосуванням оклюзійної капи на тлі фізіологічного післяпологового відновлення.

Ключові слова: *реабілітація, стоматологія, акушерство та гінекологія, автономна дисрегуляція, вегетативна нервова система.*

Received 11 Oct 2025
Accepted 29 Sep 2026
Published 30 Sep 2026

ISSN print 2414-4495, ISSN online 2710-1444, https://msz.knmu.edu.ua, msz.journal@knmu.edu.ua

Information about the authors

Aravitska Mariia – PhD, Professor, Department of Therapy, Rehabilitation and Morphology, Vasyl Stefanyk Carpathian National University, Ukraine.

Postal address: 57, Shevchenko str., Ivano-Frankivsk, 76018, Ukraine.
E-mail: ifrehabplus@gmail.com
ORCID: 0000-0003-2000-823X.

Lapkovsky Eduard – PhD, Vice-Rector for Scientific and Pedagogical Work, Professor, Department of Therapy, Rehabilitation and Morphology, Vasyl Stefanyk Carpathian National University, Ukraine.

Postal address: 57, Shevchenko str., Ivano-Frankivsk, 76018, Ukraine.
E-mail: ifrehabplus@gmail.com
ORCID: 0000-0002-7717-2236.

Sheremeta Lidiia – Doctor of Medical Sciences, Professor, Head of the Department of Therapy, Rehabilitation and Morphology, Vasyl Stefanyk Carpathian National University, Ukraine.

Postal address: 57, Shevchenko str., Ivano-Frankivsk, 76018, Ukraine.
E-mail: ifrehabplus@gmail.com
ORCID: 0000-0002-0334-4226.

Oleksiuk Liliia – PhD, Associate Professor, Department of Therapy, Rehabilitation and Morphology, Vasyl Stefanyk Carpathian National University, Ukraine.

Postal address: 57, Shevchenko str., Ivano-Frankivsk, 76018, Ukraine.
E-mail: ifrehabplus@gmail.com
ORCID: 0000-0001-8911-3535.

Kakhno Iryna – PhD, Assistant Lecturer, Department of Therapy, Rehabilitation and Morphology, Vasyl Stefanyk Carpathian National University, Ukraine.

Postal address: 57, Shevchenko str., Ivano-Frankivsk, 76018, Ukraine.
E-mail: ifrehabplus@gmail.com
ORCID: 0009-0000-2484-1865.