DOI: https://doi.org/10.17816/rjpbr643061 EDN: BVZOHD

Outcomes of spa therapy in early postmenopausal women with recurrent vulvovaginal candidiasis

Angela E. Bestaeva[1], Marina V. Ipatova[2], Agnessa S. Kaisinova[1, 3]

[1] North Caucasian Federal Scientific and Clinical Centre, Essentuki, Russia;
[2] Academician V.I. Kulakov National Medical Research Centre for Obstetrics, Gynecology and Perinatology, Moscow, Russia;
[3] Pyatigorsk Medical and Pharmaceutical Institute — Volgograd State Medical University, Pyatigorsk, Russia

ABSTRACT

BACKGROUND: Early postmenopausal women are particularly vulnerable to treatment variability due to age-related and physiological changes, which influence the active adhesion of *Candida* spp. and the subsequent development of recurrent vulvovaginal candidiasis. Spa therapy is a promising approach for managing this condition, offering significant health-promoting and adaptogenic effects.

AIM: To assess the effectiveness of spa therapy in early postmenopausal women with a history of recurrent vulvovaginal candidiasis.

MATERIALS AND METHODS: A total of 108 early postmenopausal women with recurrent vulvovaginal candidiasis were enrolled and randomly assigned to three groups: control group (*n*=36, group 3) received standard spa therapy protocols for gynecological conditions; comparison group (*n*=36, group 2) received pelotherapy in addition to standard spa therapy; main group (*n*=36, group 1) underwent endomassage and magnetic field therapy in combination with pelotherapy and standard spa therapy. The effectiveness of spa therapy was evaluated based on: vaginal microbiota analysis, degree of vaginal atrophy, medical and psychological assessments.

RESULTS: By the end of treatment and at the 6-month follow-up, an absolute normocenosis was observed in nearly half of the women in group 1, whereas at 12 months, microbiota shifted to an intermediate type, comparable to that of healthy early postmenopausal women. In group 2, a conditional normocenosis was identified after 18 days and persisted for 6 months, but with an intermediate smear type. Group 3 retained a dysbiotic profile throughout the follow-ups. At 6 months, both groups 1 and 2 showed positive shifts in vaginal atrophy; however, only group 1 exhibited minimal abnormalities. Quality of life indicators (well-being, activity, and mood) significantly improved in group 1, reaching normative values by the end of spa therapy. The well-being score in group 2 was interpreted as favorable but was statistically different from that in group 1. A statistically significant difference was observed between groups 1 and 3.

CONCLUSION: The newly developed spa therapy protocol for early postmenopausal women with recurrent vulvovaginal candidiasis sequelae promotes the restoration of vaginal microbiota, reduces vaginal atrophy, and significantly improves quality of life.

Keywords: recurrent vulvovaginal candidiasis; vaginal microbiota; spa therapy; quality of life.

To cite this article:
Bestaeva AE, Ipatova MV, Kaisinova AS. Outcomes of spa therapy in early postmenopausal women with recurrent vulvovaginal candidiasis. *Russian journal of the physical therapy, balneotherapy and rehabilitation.* 2025;24(2):117–124. DOI: 10.17816/rjpbr643061 EDN: BVZOHD

Submitted: 15.12.2024 **Accepted:** 15.01.2025 **Published online:** 12.03.2025

DOI: https://doi.org/10.17816/rjpbr643061 EDN: BVZOHD

Результаты санаторно-курортного лечения женщин менопаузального возраста с рецидивирующим вульвовагинальным кандидозом

А.Э. Бестаева[1], М.В. Ипатова[2], А.С. Кайсинова[1, 3]

[1] Северо-Кавказский федеральный научно-клинический центр, Ессентуки, Россия;
[2] Национальный медицинский исследовательский центр акушерства, гинекологии и перинатологии им. акад. В.И. Кулакова, Москва, Россия;
[3] Пятигорский медико-фармацевтический институт — Волгоградский государственный медицинский университет, Пятигорск, Россия

АННОТАЦИЯ

Обоснование. Женщины ранней постменопаузы уязвимы в отношении вариабельности лечебных мероприятий вследствие возрастных и физиологических особенностей, что оказывает влияние на активную адгезию дрожжеподобных грибов рода *Candida spp*. с последующим развитием рецидивирующего вульвовагинального кандидоза. Перспективным в лечении данной патологии является использование средств комплексной санаторно-курортной терапии, обеспечивающей высокие саногенетические и адаптогенные эффекты.

Цель исследования — изучить эффективность комплексного санаторно-курортного лечения (СКЛ) женщин постменопаузального возраста с последствиями рецидивирующего вульвовагинального кандидоза.

Материалы и методы. В исследование включены 108 женщин ранней постменопаузы с последствиями рецидивирующего вульвовагинального кандидоза, которые методом простой выборки распределены в три группы: в группе контроля (*n*=36, 3-я группа) пациентки получали стандартный лечебный комплекс для СКЛ пациенток с гинекологическими заболеваниями; в группе сравнения (*n*=36, 2-я группа) дополнительно использована комплексная пелоидотерапия; в основной группе (*n*=36, 1-я группа) пациенткам к лечебному комплексу, применяемому во 2-й группе, добавляли сочетанное воздействие эндомассажа и магнитного поля. Критерии эффективности СКЛ: исследования биоценоза влагалища, степени вагинальной атрофии, медико-психологического тестирования.

Результаты. Практически у каждой второй женщины 1-й группы по окончании лечения и спустя 6 мес. после него биоценоз влагалища классифицировали как абсолютный нормоценоз, а через 12 мес. — промежуточный тип мазка, что наблюдается у здоровых женщин раннего постменопаузального возраста; во 2-й группе наличие условного нормоценоза выявили через 18 сут и через 6 мес. после лечения при промежуточном типе мазка; в 3-й группе определили только дисбиотический тип мазка. Через 6 мес. в 1-й и 2-й группах произошли положительные сдвиги степени вагинальной атрофии, однако только в 1-й группе отметили минимальные нарушения. У женщин 1-й группы показатели качества жизни (самочувствие, активность и настроение) значительно улучшились к окончанию СКЛ и соответствовали нормативным значениям. Показатель самочувствия женщин 2-й группы трактовали как благоприятный, статистически отличающийся от показателя в 1-й группе. Следует отметить чёткую значимость различий между 1-й и 3-й группами.

Заключение. Разработанная новая методика СКЛ женщин ранней постменопаузы с последствиями рецидивирующего вульвовагинального кандидоза способствует восстановлению биоценоза влагалища, снижению степени вагинальной атрофии, значимому улучшению качества жизни.

Ключевые слова: рецидивирующий вульвовагинальный кандидоз; биоценоз влагалища; санаторно-курортное лечение; качество жизни.

Как цитировать:
Бестаева А.Э., Ипатова М.В., Кайсинова А.С. Результаты санаторно-курортного лечения женщин менопаузального возраста с рецидивирующим вульвовагинальным кандидозом // Физиотерапия, бальнеология и реабилитация. 2025. Т. 24, № 2. С. 117–124. DOI: 10.17816/rjpbr643061 EDN: BVZOHD

Рукопись получена: 15.12.2024 **Рукопись одобрена:** 15.01.2025 **Опубликована online:** 12.03.2025

DOI: https://doi.org/10.17816/rjpbr643061 EDN: BVZOHD

绝经早期女性复发性外阴阴道念珠菌病的综合疗养治疗效果研究

Angela E. Bestaeva[1], Marina V. Ipatova[2], Agnessa S. Kaisinova[1, 3]

[1] North Caucasian Federal Scientific and Clinical Centre, Essentuki, Russia;
[2] Academician V.I. Kulakov National Medical Research Centre for Obstetrics, Gynecology and Perinatology, Moscow, Russia;
[3] Pyatigorsk Medical and Pharmaceutical Institute — Volgograd State Medical University, Pyatigorsk, Russia

摘要

论证。 由于年龄及生理特征，绝经早期女性对治疗方案的可变性较为敏感，这可能影响念珠菌属（*Candida* spp.）的粘附活性，并导致复发性外阴阴道念珠菌病的发生。综合疗养治疗因其良好的生理适应及康复效应，在该病的治疗策略中具有较大前景。

目的。 评估综合疗养治疗对绝经早期女性复发性外阴阴道念珠菌病的疗效。

材料与方法。 研究共纳入108例绝经早期女性复发性外阴阴道念珠菌病患者，并采用简单随机抽样法分为三组：对照组（*n*=36，第3组）接受标准妇科疾病综合疗养治疗；对比组（*n*=36，第2组）在对照组基础上联合泥疗；实验组（*n*=36，第1组）在对比组基础上联合内生按摩及磁场疗法。疗效评估指标包括阴道微生态检测、阴道萎缩程度、医学心理测试。

结果。 几乎每两名实验组（第1组）患者中就有一名在治疗结束及随访6个月后，其阴道微生态被归类为绝对正常状态，而在12个月后，微生态呈中间型涂片，与健康绝经早期女性相符；在对比组（第2组），治疗后第18天及随访6个月时阴道微生态达到条件性正常，但仍以中间型涂片为主；在对照组（第3组），所有随访阶段均呈现菌群失调状态。随访6个月时，第1组和第2组的阴道萎缩程度均有所改善，但仅在第1组观察到最低程度的萎缩变化。第1组患者的健康状况、活动能力和情绪在疗养治疗结束时显著改善，并达到正常标准。第2组患者的健康状况被评估为良好，并在统计学上显著不同于第1组。需要强调的是，第1组与第3组之间存在显著差异。

结论。 针对绝经早期女性复发性外阴阴道念珠菌病的创新综合疗养治疗方案有助于恢复阴道微生态平衡，降低阴道萎缩程度，显著改善生活质量。

关键词： 复发性外阴阴道念珠菌病；阴道微生态；疗养治疗；生活质量。

引用本文:
Bestaeva AE, Ipatova MV, Kaisinova AS. 绝经早期女性复发性外阴阴道念珠菌病的综合疗养治疗效果研究. *Russian journal of the physical therapy, balneotherapy and rehabilitation.* 2025;24(2):117–124. DOI: 10.17816/rjpbr643061 EDN: BVZOHD

收到： 15.12.2024 **接受：** 15.01.2025 **发布日期：** 12.03.2025

BACKGROUND

Women in the early postmenopause are particularly susceptible to variability of therapeutic interventions due to age-related and physiological factors [1–4]. These factors contribute to increased adhesion of *Candida spp*. yeast-like fungi, ultimately resulting in recurrent vulvovaginal candidiasis (RVVC). The treatment of postmenopausal women with RVVC presents specific challenges, is often limited to symptomatic relief, and tends to yield only short-term effects. Conservative management of RVVC in this population necessitates the development of individualized therapeutic and wellness strategies [5–7]. Under current conditions, spa treatment (ST) is considered a reasonable nonpharmacologic approach to comprehensive correction in postmenopausal women with RVVC. The potential benefits of integrated physical ST are attributed to its broad-spectrum effects on endocrine–metabolic processes and hormonal balance, as well as its notable sanogenetic and adaptogenic properties, all of which contribute to the absence of adverse reactions [8–13].

AIM

The work aimed to evaluate the effectiveness of comprehensive ST in early postmenopausal women with the sequelae of RVVC.

METHODS

This study was conducted at the Pyatigorsk Clinic of the North Caucasian Federal Scientific and Clinical Center of the Federal Medical and Biological Agency of Russia in Pyatigorsk and included 108 early postmenopausal women with mild to moderate climacteric symptoms and a history of RVVC previously treated with medication.

Inclusion criteria:

- Early postmenopause (defined as the period beginning one year after the final menstrual period and lasting no more than five years);
- A verified diagnosis of RVVC (⩾ 4 recurrences per year), with the latest episode occurring more than two weeks after the last course of drug therapy, and with no detectable pathogens upon arrival at the health resort;
- Signed informed consent for follow-up monitoring and ST.

Non-Inclusion Criteria:

- General or specific contraindications to the selected natural or preformed physical therapy modalities;
- Presence of bacterial vaginosis, ureaplasmosis, mycoplasmosis, or other sexually transmitted infections requiring treatment;
- HIV infection;
- Positive test results for hepatitis C virus or syphilis (Wassermann reaction), or ongoing treatment for these conditions;
- Dermatologic diseases of the external genitalia.

ST methods: all patients were randomly assigned to one of three groups using simple random sampling. In the control group (*n*=36; group 3), patients received standard therapy for gynecologic conditions, including: therapeutic exercise, 30 minutes per session, 10 sessions per course; general iodine–bromine baths at 36–37 °C for 15 minutes, 8 sessions per course; color rhythm therapy using the ELM-01 Andro-Gin device (Russia) while seated and wearing therapeutic glasses. The device output was set to 1 mW for the first session and 4 mW from the second session onward, with a 2-second switching interval and a frequency of 10 Hz. Blue light was applied to both eyes for 10 minutes per day, totaling 8 sessions per course. In the reference group (*n*=36; group 2), the patients additionally received local combined peloid therapy: phonophoresis with Tambukan mud (Tambuil) using the Gineton-MM device (Russia). Before the procedure, the vaginal mucosa was cleansed with a furacilin solution; a Cusco vaginal speculum was inserted; then, 2 mL of oil-based Tambuil was administered intravaginally. A disposable VI5 applicator with a waveguide was used for circular insonation of the vaginal mucosa with the following parameters: ultrasound mode pulsed, duty cycle 2:1; ultrasound intensity: 0.1 W/cm^2; frequency: 26.5 kHz; vibration amplitude at the waveguide tip: 60–80 μm; distance from the waveguide tip to the insonated surface: ⩾ 10 mm; exposure time: 60 s; five sessions were administered on alternate days. In addition, patients received vaginal tampons soaked in oil-based Tambuil: the preparation was applied to a gauze tampon, which was inserted intravaginally once daily for 2 hours; 10 consecutive daily sessions were performed per course. In the main group (*n*=36; group 1), patients received, in addition to the treatment regimen used in group 2, combined endomassage and magnetic field therapy using the MANTIS MR 991 device (Italy) with the Mini DES applicator. The procedure was performed with the patient lying supine or prone in a special suit. The areas of exposure included the anterior abdominal wall or the L_5–S_1 spinal region. On the device's touch control panel, the setting "pulsed magnetic fields in stochastic resonance (CMPS SYSTEM)" was selected in simple mode. Intensity was adjusted individually based on the patient's painless sensory perception. On even-numbered days, sliding horizontal movements were performed with the applicator from the lateral abdominal regions toward the umbilicus, with the patient lying supine — 5 sessions total. On odd-numbered days, the applicator was used to perform slow, alternating vertical upward and downward movements combined with horizontal movements, with the patient lying prone — 5 sessions total. Each session lasted 10 minutes. The total course consisted of 10 sessions.

Criteria for ST effectiveness included: evaluation of vaginal microbiota using the Femoflor-16 test system; assessment of the degree of vaginal atrophy 6 months after completion of ST (post-treatment follow-up period); analysis of psychophysiological testing results based on the well-being,

activity, and mood scale [14–16]. Statistical analysis was performed on a JBM PC Pentium IV–2.4 Hz using standard software (Windows XP operating system). Differences were considered statistically significant at $p< 0.05$. Vaginal microbiota results (i.e., the ratio of pathogenic to total bacterial load) were expressed in decimal logarithmic values.

RESULTS

The overall condition of the women in all three ST program groups remained satisfactory. No negative emotional responses were observed, and daily recorded vital signs were stable. Physiotherapeutic procedures were well tolerated across all groups, regardless of the severity of climacteric syndrome. No cases of intolerance or adverse effects were reported.

As shown in Fig. 1, the regression of total vaginal symptom complaints following ST was most pronounced on day 18 (upon completion of the ST course) in group 1, which received the newly developed treatment regimen. The score decreased from 3.33 to 0.11 points ($p< 0.01$). In group 2, the score also declined significantly ($p< 0.01$), from 3.04 to 1.40 points. In group 3, the score decreased from 2.85 to 2.00 points; however, this change was not statistically significant ($p > 0.05$).

Vaginal biocenosis was assessed using the Femoflor-16 test system. The ratio of pathogen count to total bacterial mass was expressed in decimal logarithms. Changes in the vaginal microbiota showed that only in group 1, which received the newly developed therapeutic and preventive ST protocol, the quantitative indicator of total bacterial mass reached 6.71±0.01, and the proportion of lactobacilli was 98.5%, consistent with absolute normocenosis. The relative quantitative indicator of aerobic and anaerobic opportunistic microorganisms was <–3 lg (0.1%), with only *Peptostreptococcus spp.* reaching –2.55±0.02 lg (0.1–1%), indicating a mildly elevated level. The absolute count of *Candida spp.* was 2.50±0.01 lg, which was not diagnostically significant. In

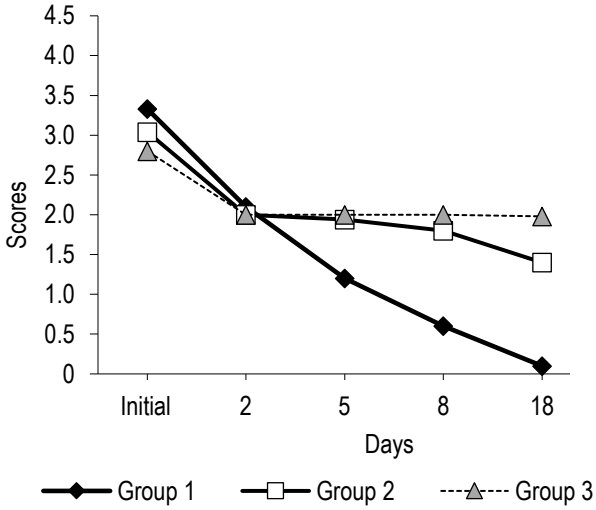

Fig. 1. Regression of a set of clinical complaints.

women of group 2, the quantitative indicator of total bacterial mass was 6.20±0.03, and the proportion of lactobacilli was 96.8%, corresponding to absolute normocenosis. However, several aerobic and anaerobic opportunistic microorganisms were mildly elevated: *Peptostreptococcus spp.*, 1.77±0.01 lg; *Streptococcus spp.*, –1.37±0.02 lg (0.1%–1%); and *Enterobacteriaceae spp.*, –2.01±0.02 lg (0.1%–1%). The absolute count of *Candida spp.* was 3.30±0.01 lg, which was not diagnostically significant, although some patients reported intermittent vaginal itching. By day 18 of the spa stay, vaginal normocenosis was diagnosed in women of group 1 based on Femoflor-16 testing, whereas women in group 2 demonstrated moderate mixed aerobic–anaerobic dysbiosis, requiring continued pharmacologic therapy at their place of residence. In group 3, which received standard ST, no significant changes in Femoflor-16 parameters were observed.

By day 18 after treatment and at the 6-month follow-up, nearly half of the women in group 1 exhibited vaginal microbiota consistent with absolute normocenosis. At 12 months, the smear type corresponded to an intermediate type, which is typical for healthy women in early postmenopause without subjective complaints or clinical manifestations. In group 2, conditional normocenosis and an intermediate smear type were observed on day 18 and at the 6-month follow-up. However, by 12 months, vaginal dysbiosis developed, characterized by a reduced lactobacillus count and low leukocyte levels. Yeast forms of fungi were identified in 10 women (27.8%). In group 3, only a dysbiotic smear type was recorded throughout the follow-up period. Yeast forms of fungi were found in every second woman at 6 months and in 34 women (94.4%) at 12 months.

As shown in table 1, at baseline, the degree of vaginal atrophy in early postmenopausal women with a history of RVVC corresponded to moderate atrophic changes in the vaginal epithelium, which periodically caused discomfort and interfered with daily activities. By 6 months, positive changes were observed in groups 1 and 2. However, only women in group 1 reported minimal disturbances and mild atrophic changes that did not affect their daily functioning.

The changes in the psychophysiological testing results based on the well-being, activity, and mood scale on day 18 of treatment showed favorable outcomes in all groups of women with RVVC. In group 1, scores for well-being, activity, and mood significantly improved ($p < 0.05$) by the end of the spa-based treatment, reaching normative values. In group 2, the well-being score was interpreted as favorable but was statistically different from that in group 1. Notably, the difference between groups 1 and 3 was clearly statistically significant.

DISCUSSION

The primary component of the therapeutic program in women from groups 1 and 2 was centrally acting regulatory physiotherapy aimed at improving functional interactions

Table 1. Dynamics of the degree of vaginal atrophy in women after the after-effect period of spa treatment

Period of observation	Group 1 (n = 36)	Group 2 (n = 38)	Group 3 (n = 33)	Statistical significance between groups, p (χ^2 test)
Baseline	2.20±0.01	2.30±0.02	2.22±0.02	p_{1-2} >0.05; p_{2-3} >0.05; p_{1-3} >0.05
After 6 months	1.32±0.02	2.10±0.02	2.18±0.02	p_{1-2}=0.0001; p_{2-3} >0.05; p_{1-3}=0.0001
p (within group), Wilcoxon test baseline — 6 months	0.0001	0.005	0.40	

Table 2. Dynamics of results of operational assessment of well-being, activity, mood

Period of observation	Group 1 (n = 36)	Group 2 (n = 38)	Group 3 (n = 33)	Statistical significance between groups, p (χ^2 test)
Before/after day 18 WELL-BEING	3.36±0.21/ 5.11±0.10*	3.45±0.12/ 4.45±0.12*	3.15±0.20/ 4.16±0.13*	Before: p_{1-3}. p_{1-3}. p_{2-3} >0.05 Day 18: p_{1-2} >0.05. p_{2-3} >0.05. p_{1-3}=0.0001
Before/after day 18 ACTIVITY	2.37±0.13/ 5.23±0.19	2.64±0.15/ 4.88±0.11	2.54±0.10/ 4.65±0.08	Before: p_{1-3}. p_{1-3}. p_{2-3} >0.05 Day 18: p_{1-3}=0.002. p_{2-3} >0.05. p_{1-2} >0.05
Before/after day 18 MOOD	3.36±0.10/ 5.45±0.08	3.21±0.12/ 5.34±0.05	3.29±0.14/ 4.78±0.09	Before: p_{1-3}. p_{1-3}. p_{2-3} >0.05 Day 18: p_{1-2}=0.005. p_{1-3}=0.005. p_{2-3}=0.005

Note. The numerator is the indicator before treatment, the denominator is the indicator after treatment. *p <0.01 — the significance of the differences between the indicators before and after treatment.

within the higher regulatory centers of the reproductive system. This may be attributed to the influence of physical factors on both local regulatory pathways and central neurohumoral mechanisms [17–20]. Accordingly, the courses of the proposed ST programs used in groups 1 and 2 demonstrated clinical effectiveness in women in early postmenopause with RVVC. The magnitude and duration of the positive effects were more pronounced in group 1. This was associated with the use of physical factors applied to different target areas (general and local), taking into account both general somatic and gynecological complaints. The choice of therapeutic interventions was based on a comprehensive evaluation of overall health status, symptoms of menopausal syndrome, and the condition of the vaginal mucosa at the start of treatment. The effectiveness of the treatment was ensured by age-appropriate, specially developed mitigated therapeutic protocols.

CONCLUSION

The newly developed ST method for early postmenopausal women with RVVC sequelae promotes the restoration of vaginal microbiocenosis, reduces vaginal atrophy, and significantly improves quality of life.

ADDITIONAL INFORMATION

Author contributions. A.E. Bestaeva — collection and statistical processing of material, writing of text; M.V. Ipatova — concept and design of the study, statistical processing of material, writing of text; A.S. Kaisinova — concept and design of the study, writing of text, editing. All authors made a substantial contribution to the conception of the work, acquisition, analysis, interpretation of data for the work, drafting and revising the work, final approval of the version to be published and agree to be accountable for all aspects of the work.

Ethics approval. The study was approved by the local ethics committee of the Pyatigorsk Research Institute of Balneology of the Federal State Budgetary Institution SKFNC FMBA of Russia (protocol N. 4 dated 01/28/2020).

Consent for publication. All study participants voluntarily signed an informed consent form before inclusion in the study. The study protocol is posted at https://skfmba.ru

Funding sources. No funding.

Disclosure of interests. The authors have no relationships, activities or interests for the last three years related with for-profit or not-for-profit third parties whose interests may be affected by the content of the article.

Statement of originality. In creating this work, the authors did not use previously published information (text, illustrations, data).

Data availability statement. The editorial policy regarding data sharing does not apply to this work, and no new data was collected or created.

Generative AI. Generative AI technologies were not used for this article creation.

Provenance and peer-review. This paper was submitted to the journal on an unsolicited basis and reviewed according to the usual procedure. Two external reviewers, a member of the editorial board, and the scientific editor of the publication participated in the review.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Вклад авторов. А.Э. Бестаева — сбор и статистическая обработка материала, написание текста; М.В. Ипатова — концепция и дизайн исследования, статистическая обработка материала, написание текста, редактирование; А.С. Кайсинова — концепция и дизайн исследования, написание текста, редактирование. Все авторы одобрили рукопись (версию для публикации), а также согласились нести ответственность за все аспекты работы, гарантируя надлежащее рассмотрение и решение вопросов, связанных с точностью и добросовестностью любой её части.

Этическая экспертиза. Проведение исследования одобрено локальной этической комиссией Пятигорского НИИ курортологии СКФНКЦ ФМБА России (протокол № 4 от 28.01.2020).

Согласие на публикацию. Все участники исследования добровольно подписали форму информированного согласия до включения в исследование.

Источники финансирования. Отсутствуют.

Раскрытие интересов. Авторы заявляют об отсутствии отношений, деятельности и интересов за последние три года, связанных с третьими лицами (коммерческими и некоммерческими), интересы которых могут быть затронуты содержанием статьи.

Оригинальность. При создании настоящей работы авторы не использовали ранее опубликованные сведения (текст, иллюстрации, данные).

Доступ к данным. Редакционная политика в отношении совместного использования данных к настоящей работе не применима, новые данные не собирали и не создавали.

Генеративный искусственный интеллект. При создании настоящей статьи технологии генеративного искусственного интеллекта не использовали.

Рассмотрение и рецензирование. Настоящая работа подана в журнал в инициативном порядке и рассмотрена по обычной процедуре. В рецензировании участвовали два внешних рецензента, член редакционной коллегии и научный редактор издания.

REFERENCES | СПИСОК ЛИТЕРАТУРЫ

1. Suhih GT, Prilepskaya VN, Nazarova NM, et al. *Diagnosis, treatment and prevention of diseases of the vulva and vagina in obstetrics and gynecology*. Moscow: LLC ID Tretyakov; 2024. (In Russ.) EDN: VVPCUS
2. Fasola E, Bosoni D. Dynamic quadripolar radiofrequency: pilot study of a new high-tech strategy for prevention and treatment of vulvar atrophy. *Aesthet Surg J*. 2019;39(5):544–552.
3. Serov VN, Silant'eva ES, Ipatova MV, et al. Safety of physiotherapy in gynecological patients. *Obstetrics and gynecology*. 2007;3:74–77. EDN: IAUMTZ
4. *Inflammatory diseases of female pelvic organs: Russian clinical guidelines. Russian Society of Obstetricians and Gynecologists*. Moscow; 2020. (In Russ.)
5. Abuseva GR, Badtieva VA, Didur MD, et al. *Physical and rehabilitation medicine normative legal regulation. Methodical recommendations*. Saint Petersburg; 2020. (In Russ.) EDN: LNMPVO
6. Epifanov VA, Kotenko KV, Korchazhkina NB, et al. *Medical rehabilitation in obstetrics and gynecology*. Moscow: «GEOTAR-Media»; 2023. (In Russ.) EDN: EOQERU
7. Ujba VV, Kotenko KV, Orlova GV. Application of non-drug programs for correction of metabolic syndrome. *Physiotherapy, balneology and rehabilitation*. 2011;1:40–42. EDN: NDOAKT
8. Kotenko KV, Frolkov VK, Nagornev SN, et al. Prospects for the use of drinking mineral waters in the rehabilitation of patients with coronavirus (COVID-19) infection: analysis of the main sanogenetic mechanisms. *Issues of balneology, physiotherapy and therapeutic physical training*. 2021;98(6–2):75–84. doi: 10.17116/kurort20219806275 EDN: RDBRST
9. Razumov AN, Badtieva VA, Knyazeva TA. Non-drug therapy as a method of partial correction of proatherogenic shifts during long-term use of beta-blockers and thiazide diuretics. *Issues of balneology, physiotherapy and therapeutic physical training*. 2002;6:5–9. (In Russ.) EDN: VSUTUV
10. Razumov AN, Ponomarenko GN, Badtieva VA, et al. *Medical rehabilitation of patients who have had COVID-19 in health resort organizations. Methodological recommendations*. Saint Petersburg; 2021. (In Russ.) EDN: AEDCML
11. Ujba VV, Kotenko KV, Kolbahova SN. The latest technologies in restorative medicine for the treatment of occupational lung diseases. In: *Proceedings of the First All-Russian Congress of Physicians of Restorative Medicine, Moscow, February 27 — March 1, 2007*. Moscow: LLC «MEDI Expo»; 2007. 282 p. (In Russ.) EDN: QBOLBV
12. Cyganova TN, Frolkov VK, Korchazhkina NB. Pathogenetic rationale for the use of hypo-hyperoxic training in the treatment and prevention of complications of coronavirus infection COVID-19. *Physiotherapist*. 2021;1:14–25. doi: 10.33920/med-14-2102-02 EDN: FBVVIW
13. Efendieva MT, Badtieva VA, Rusenko NI. Magnesium-containing mineral waters in the treatment of patients with cardiac manifestations of gastroesophageal reflux disease. *Issues of balneology, physiotherapy and therapeutic physical training*. 2006;6:31–34. EDN: HDSZYC
14. Kotenko KV, Ujba VV, Korchazhkina NB, et al. *Instructions for conducting additional methods of examination and rehabilitation of athletes*. Moscow; 2012. 25 p. (In Russ.) EDN: QBXBWL
15. Kotenko KV, Ujba VV, Korchazhkina NB, et al. Improving the functional capabilities of athletes in cyclic sports. *Occupational medicine and industrial ecology*. 2013;9:42–44. EDN: RCDVZB
16. SHarykin AS, Badtieva VA, Pavlov VI. *Sports cardiology: a guide for cardiologists, pediatricians, physicians of functional diagnostics and sports medicine, trainers*. Moscow: Izdatel'stvo «Ikar»; 2017. (In Russ.)
17. Korchazhkina NB, Ashihmina MV, Gurvich VB, et al. *The use of unloading-dietary therapy in restorative medicine*. Moscow; 2004. (In Russ.) EDN: QBVDLR
18. Korchazhkina NB, Mihajlova AA. Features of the use of stabiloplatforms with biofeedback in various socially significant diseases. *Physiotherapy, balneology and rehabilitation*. 2019; 18(2):103–106. doi: 10.17816/1681-3456-2019-18-2-103-106 EDN: KXDZOQ
19. Mihajlova AA, Korchazhkina NB, Koneva ES, Kotenko KV. Psychocorrective effect of using combined methods of medical rehabilitation in patients who have suffered an ischemic stroke.

Physiotherapy, balneology and rehabilitation. 2020;19(6): 380–383. doi: 10.17816/1681-3456-2020-19-6-5
EDN: UBARKW

20. Kotenko KV, Korchazhkina NB, Kuzovlev OP, et al. *Rehabilitation program for patients with dorsopathies: A training manual for doctors*. Moscow; 2005. (In Russ.) EDN: QBUUKH

AUTHORS' INFO

*** Agnessa S. Kaisinova,** MD, Dr. Sci. (Medicine), Professor;
address: 24 Sovetskaja st, Essentuki, Russia, 357600;
ORCID: 0000-0003-1199-3303;
eLibrary SPIN: 6552-9684;
e-mail: zamoms@skfmba.ru

Angela E. Bestaeva;
ORCID: 0009-0004-0371-3302;
eLibrary SPIN: 1156-7981;
e-mail: an.beataeva@yandex.ru

Marina V. Ipatova, MD, Dr. Sci. (Medicine);
ORCID: 0000-0003-2094-8571;
eLibrary SPIN: 1006-6969;
e-mail: mavlip@yandex.ru

ОБ АВТОРАХ

*** Кайсинова Агнесса Сардоевна,** д-р мед. наук, профессор;
адрес: Россия, 357600, Ессентуки, ул. Советская, д. 24;
ORCID: 0000-0003-1199-3303;
eLibrary SPIN: 6552-9684;
e-mail: zamoms@skfmba.ru

Бестаева Анджела Эдуардовна;
ORCID: 0009-0004-0371-3302;
eLibrary SPIN: 1156-7981;
e-mail: an.beataeva@yandex.ru

Ипатова Марина Владимировна, д-р мед. наук;
ORCID: 0000-0003-2094-8571;
eLibrary SPIN: 1006-6969;
e-mail: mavlip@yandex.ru

* Corresponding author / Автор, ответственный за переписку