QUALITY IN SPORT
eISSN 2450-3118 · Open Access · Peer-reviewed
apcz.umk.pl/QS Nicolaus Copernicus University in Toruń

LAZAR, Martyna, SZKARADOWSKI, Łukasz, BARANOWSKI, Szymon, LEWAŃSKA, Julia, BOGDAŃSKI, Krzysztof, KRUSZYŃSKA, Zuzanna, ALESHCHYK, Anastasiya, ADAMCZAK, Michał, MAJEWSKI, Marcel and LIBURA, Bogumił. Physical Activity as an Adjunctive Therapy for Endometriosis: A Narrative Review. Quality in Sport. 2026;66:73909. https://doi.org/10.12775/QS.2026.66.73909

ARTICLE TIMELINE
Received: 02.07.2026. Revised: 02.08.2026. Accepted: 02.08.2026. Published: 09.08.2026.

The journal has been awarded 20 points in the parametric evaluation by the Polish Ministry of Higher Education and Science (Annex to the announcement of 05.01.2024, No. 32553). Unique Journal Identifier: 201398. Scientific disciplines assigned: Economics and finance (Field of social sciences); Management and Quality Sciences (Field of social sciences).
Punkty Ministerialne z 2019 – aktualny rok 20 punktów. Załącznik do komunikatu Ministra Szkolnictwa Wyższego i Nauki z dnia 05.01.2024 Lp. 32553. Posiada Unikatowy Identyfikator Czasopisma: 201398. Przypisane dyscypliny naukowe: Ekonomia i finanse (Dziedzina nauk społecznych); Nauki o zarządzaniu i jakości (Dziedzina nauk społecznych).

Physical Activity as an Adjunctive Therapy for Endometriosis: A Narrative Review

Martyna Lazar
ORCID https://orcid.org/0009-0001-5973-846X
e-mail: martyna.lazar@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Łukasz Szkaradowski
ORCID https://orcid.org/0009-0001-3108-3051
e-mail: lukasz.szkaradowski@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Szymon Baranowski
ORCID https://orcid.org/0009-0000-5877-4875
e-mail: szymon.baranowski@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Julia Lewańska
ORCID https://orcid.org/0009-0005-0102-0075
e-mail: julia.lewanska@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Krzysztof Bogdański
ORCID https://orcid.org/0009-0005-1023-6257
e-mail: krzysztof.bogdanski@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Zuzanna Kruszyńska
ORCID https://orcid.org/0009-0001-2905-9642
e-mail: zuzanna.kruszynska@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Anastasiya Aleshchyk
ORCID https://orcid.org/0009-0006-5368-6343
e-mail: anastasiya.aleshchyk@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Michał Adamczak
ORCID https://orcid.org/0009-0002-3693-1731
e-mail: michal.adamczak@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Marcel Majewski
ORCID https://orcid.org/0009-0002-6658-235X
e-mail: marcel.majewski@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Bogumił Libura
ORCID https://orcid.org/0009-0006-6889-1569
e-mail: bogumil.libura@stud.umed.lodz.pl
Medical University of Lodz, Lodz, Poland

Corresponding Author
Marcel Majewski
e-mail: marcel.majewski@stud.umed.lodz.pl

Abstract

Background

Endometriosis is a chronic condition that affects approximately one in ten women of reproductive age worldwide. Clinical expression varies among patients, but the most prevalent include pelvic pain, heavy menstrual bleeding, pain during sexual intercourse, and impaired fertility. Treatment usually relies on alleviating the symptoms by administering pain medications, hormonal therapies, or performing surgical procedures, which are often associated with side effects and variable long-term outcomes. Physical activity can be considered a beneficial complementary intervention because it may improve pain modulation and mental health. Nevertheless, current research has not yet established consistent evidence regarding the effectiveness of exercise in improving symptoms or disease outcomes in women with endometriosis.

Aim

This narrative review aims to summarize and critically evaluate current evidence regarding the impact of physical activity on women with endometriosis, focusing on pain relief, quality of life, exercise recommendations, barriers to adherence, and the limitations within existing research.

Material and methods

This narrative review was based on studies identified through searches of the PubMed, Google Scholar, and Europe PMC databases. Relevant studies were reviewed to evaluate the effects of physical activity on pain, quality of life, and other symptoms associated with endometriosis.

Results

The current evidence suggests that physical activity and exercise may reduce pain in endometriosis, improve quality of life, and enhance psychological well-being. However, the available evidence remains limited because of the small number of randomized controlled trials, heterogeneous exercise interventions, and variability in outcome measures, thereby preventing the implementation of definitive recommendations for optimal exercise prescription.

Conclusions

Physical activity appears to be safe and could be a beneficial adjunctive therapy for the management of endometriosis symptoms. However. The current literature remains limited and yields insufficient results. Therefore, further high-quality randomized controlled trials are needed to establish evidence-based exercise recommendations for women with endometriosis.

Keywords

Endometriosis, physical activity, exercise therapy, chronic pain, quality of life, inflammation

Introduction

Endometriosis is a benign disease that affects approximately 10% of women of reproductive age worldwide and is characterized by the presence of endometrial cells outside the uterine cavity [1]. Ectopic endometrial tissue exhibits anatomical and functional characteristics of normal endometrium. Clinical symptoms of endometriosis vary depending on the patient and can change over time; however, 90% of symptomatic patients suffer from dysmenorrhoea. Other manifestations include dyspareunia, chronic pelvic pain, infertility, and also symptoms from other organs such as painful bowel movements or dysuria. The manifestations of the disease affect the quality of life, relationships, work productivity, and mental health. Unfortunately, even though the symptoms are damaging to the patients, according to the World Health Organization, the average time to diagnosis of endometriosis takes a long time of 4-12 years [1].

The pathogenesis of the disorder is unknown; however, multiple theories exist regarding the origin of endometrial-like tissue outside the uterine cavity. The most prevalent include: Sampson's theory of retrograde menstruation, metaplasia and inflammation caused by immune dysregulation [2].

Women affected by endometriosis exhibit elevated levels of pro-inflammatory cytokines and mediators. These include interleukins IL-1β, IL-6, IL-8, tumor necrosis factor-α (TNF-α), and vascular endothelial growth factor (VEGF) [3,4]. They promote the survival and proliferation of ectopic endometrial lesions, stimulate angiogenesis, and sensitize peripheral nociceptors, therefore playing an important role in the development and maintenance of chronic pain in the disease. Thus non-pharmacological interventions that may modulate the inflammatory pathways are gaining attention. Regular physical activity exerts anti-inflammatory effects by releasing immunoregulatory myokines from contracting skeletal muscle, thereby modulating immune function and inflammatory pathways [5]. Furthermore, exercise may also improve psychological well-being, reduce stress, and enhance overall physical function, thus making it a promising adjunctive therapy for women with endometriosis [6].

Due to limited understanding of the disease and the wide range of clinical symptoms, treatment remains limited and primarily focuses on symptom relief. Currently, most therapies are pharmacological or surgical treatment. Pharmacotherapy includes hormonal treatments, nonsteroidal anti-inflammatory drugs, and aromatase inhibitors [7]. Even though the therapies are shown to reduce the symptoms of endometriosis, other complementary therapies have also been suggested. Main ideas include physical activity and diet [8-10].

Potential Mechanisms of Exercise in Endometriosis Pathophysiology

The beneficial effects of physical activity and exercise in patients with endometriosis are presumed to result from multiple physiological mechanisms. This disease is characterised by a chronic inflammatory state that is associated with elevated levels of pro-inflammatory cytokines which include (IL)-1β, IL-6, IL-8, and tumor necrosis factor-α (TNF-α), as well as increased production of prostaglandins and angiogenic factors such as vascular endothelial growth factor (VEGF) [3,4]. They promote the survival and growth of endometrial lesions, stimulate angiogenesis, and sensitize peripheral and central nociceptive pathways, thereby contributing to chronic pain and disease progression.

Regular physical activity has been demonstrated to have anti-inflammatory effects. During exercise, contracting skeletal muscle releases myokines such as IL-6, which differ functionally from the chronically elevated IL-6 observed in inflammatory diseases. It is released temporarily and stimulates the production of anti-inflammatory mediators, such as IL-10 and IL-1ra, while simultaneously suppressing TNF-α production. Additionally, regular exercise improves immune regulation, reduces chronic inflammation, and may decrease oxidative stress [11-13].

Exercise could also influence pain through neurophysiological mechanisms. Physical activity is a way to stimulate the release of endogenous opioids and endocannabinoids and may reduce a process recognized as an important contributor to pain in patients with endometriosis, which is called central sensitization [14].

Furthermore, improvements in patients ’fitness, increased pelvic blood flow, better muscle function and sleep quality, and psychological well-being may reduce pain perception and improve overall quality of life [6, 15].

Even though these biological mechanisms provide a strong theoretical rationale for using exercise as an adjunctive therapy, direct evidence linking physical activity to improvements in endometriosis progression is currently limited.

Effects of Physical Activity on Pain in Women with Endometriosis

Pain is the most common symptom of endometriosis. In many cases, it is too bothersome for the patients during the period of menstruation to continue with their daily tasks. Oftentimes, the usual treatment of endometriosis is not enough to alleviate the pain; therefore, other forms of therapy are sought after. Growing evidence suggests that physical activity could benefit its management. Exercise is theorized to reduce pain through several mechanisms, including modulation of inflammatory pathways, stimulation of endogenous opioid release, improved pain tolerance, enhanced pelvic blood flow, and improved psychological health. Unfortunately, although those biological mechanisms exist, the clinical evidence remains limited.

A systematic review by Tennfjord et al. in 2021 identified only three eligible studies: 2 randomized controlled trials and 1 pre-post study without a control group, involving 109 women [16]. The exercises in those studies involved yoga, aerobic exercise, and strength and flexibility training, spanning 8 to 24 weeks. Even though one of those studies showed a reduction in pain intensity and another found lower stress levels, the evidence was inconsistent. The authors of the systematic review were unable to perform a meta-analysis because the included studies differed substantially in exercise methods, outcome measures, and study design [16].

There has also been a systematic review and meta-analysis recently that found that what may reduce the pain in endometriosis are structured exercise interventions [15]. The meta-analysis shows that physical activity has a significant impact on several aspects of people with endometriosis' lives, including their struggle to improve their quality of life, such as pain ($P<0.0001$) and emotional well-being ($P=0.006$) [15]. Some studies suggest that even though exercise does not handle the worst pain, it can have benefits in reducing the current pelvic pain. The research shows that the benefits of physical activity persist after a 12-month follow-up [17]. Beyond the physical symptoms, patients reported increased confidence in themselves and in managing their condition, suggesting that exercise could improve the well-being of women with endometriosis [18].

Therefore, while regular physical activity appears to be a promising additional strategy for pain management in patients with endometriosis, the current evidence doesn’t support any specific form of exercise. That’s why it is important to highlight the need for larger randomized controlled trials with standardized, structured intervention protocols and validated measures of pain.

Exercises suggested to alleviate pain

Currently, there is no standardized exercise prescription that can be found for women with endometriosis because, as stated in the previous paragraph, the evidence that is available is limited and the interventions described in the clinical studies vary. However, the research included several types of exercises proposed, such as aerobic and resistance training, yoga, flexibility exercises, pelvic floor muscle training (PFMT), and combined exercise programs.

Currently, no single exercise has demonstrated superiority over others in reducing endometriosis symptoms. One study suggests that it is important for patients to adjust the intensity and type of exercise to the severity of their symptoms, their physical fitness, and their personal preferences, as this helps them remain physically active. This highlights the importance of individualized exercise prescriptions when designing interventions for women with endometriosis [18]. Therefore, during periods of symptom intensification, reducing exercise intensity rather than discontinuing physical activity altogether may help maintain exercise habits while also minimizing discomfort.

Pelvic floor muscle training is seen as a promising supplementary intervention because it can enhance

pelvic floor function and reduce pain. Additionally, it is an exercise that can be safely done during menstruation and times of heightened pain. Thus, it indicates its potential role as an accessible technique for patients; however, further research is required to ascertain its effectiveness [18]. Qualitative evidence suggests that participating in supervised exercise programs, together with education about pain and exercise, could improve confidence and reduce fear of movement in patients, thereby facilitating long-term participation [18].

Although there are no specific exercise guidelines for women with endometriosis, current recommendations generally encourage women to follow the World Health Organization standard for adults, which includes at least 150-300 minutes of moderate-intensity aerobic physical activity or 75-150 minutes of vigorous-intensity activity per week, as well as exercises focused on strengthening the muscles on two or more days per week [19].

Barriers to Physical Activity and Exercise Adherence

Even though physical activity may be a promising additional therapy for patients with endometriosis, these benefits can be achieved only with consistent exercise. Thus, it is important to note that maintaining regular physical exercise remains a challenge for many women because of physical and psychological barriers specific to the disease. Symptoms such as chronic pelvic pain, dysmenorrhea, and fatigue frequently interfere with the ability to exercise and increase the fear of symptom exacerbation. Furthermore, what can also lead to less motivation for physical exercise is depression, which is more common amongst patients with endometriosis [20].

Recent research confirmed that lack of energy, fatigue, and depressive symptoms are perceived by women as barriers to physical activity, meaning that both physical and psychological factors should be addressed when designing exercise interventions [20]. Furthermore, endometriosis is an unpredictable disease whose symptoms are constantly fluctuating, which can reduce adherence to regular physical activity since women may need to modify or reduce exercise intensity during the exacerbation of symptoms.

Research shows that many patients view exercise as potentially harmful; therefore, supervised exercise can provide opportunities for personalized feedback, symptom monitoring, and appropriate adjustments [18]. Together, these results suggest that effective exercise programs for women with endometriosis must be individualized. They should include exercise plans tailored to them, education, symptom management, and ongoing support from specialists to increase adherence and achieve better long-term outcomes.

Limitations and current evidence

Although in recent years there has been growing interest in endometriosis and additional therapies, such as physical activity, the current evidence base remains limited and insufficient to deliver definitive clinical recommendations. The main limitation is a small number of high-quality randomized controlled trials (RCTs). In the most recent systematic review and meta-analysis, only 6 RCTs were included, involving 251 patients who met the criteria, further underscoring the scarcity of clinical research in this field [15]. Furthermore, the same conclusions were drawn from earlier research, which identified only three intervention studies, with substantial heterogeneity that precludes meaningful comparisons [16]. The trials that already exist differ considerably in methods of exercise, including yoga, pelvic floor muscle training, aerobic and resistance training, and multimodal rehabilitation programs, as well as duration, frequency, supervision, and intensity. As a result, current evidence lacks enough information to determine the optimal type, intensity, frequency, or duration of exercise for women with endometriosis, highlighting the need for standardized exercise protocols in future clinical trials [15,16]. Additionally, those studies used a wide range of outcome measures, including visual analog scales (VAS), the Endometriosis Health Profile (EHP-30), the Short Form-36 (SF-36), and various psychological assessment tools, thereby limiting the viability of quantitative synthesis and comparison across studies.

Additional methodological concerns include small patient sample sizes, short follow-up periods or none at all, inadequate reporting of exercise adherence, and risks of bias due to randomization procedures, allocation concealment leading to selection bias, and blinding, which is especially difficult in research involving exercise. Poor adherence reporting makes it difficult to determine whether observed outcomes reflect the intervention's effectiveness or differences in participants' compliance with the prescribed exercise program.

Furthermore, patient characteristics differed significantly across studies, including disease stage, symptom severity, and current and past treatments, further introducing clinical heterogeneity.

Many studies, even though they provided valuable insights into patients' experiences and physical barriers, focused primarily on patient-reported outcomes and did not investigate objective biomarkers of inflammation or the physical function associated with disease progression. Thus, that research could not establish the efficacy of treatment [16].

While current evidence suggests that physical activity and exercise are safe and may alleviate pain, improve quality of life, and patients ’psychological state, the certainty of the evidence remains low. Future research should prioritize randomized controlled trials with standardized exercise protocols, validated outcome measures, long-term follow-ups, and objective assessments of physical activity.

Conclusion

Physical activity is increasingly discussed as a potential adjunctive strategy in the management of endometriosis. The evidence currently available suggests that regular exercise may help reduce pain severity, improve quality of life, and enhance psychological well-being. Those are likely mediated by several mechanisms, including modulation of inflammatory pathways, neurophysiological regulation of pain, and improvements in physical and mental health.

The current evidence, however, remains limited due to the small number of quality randomized controlled trials, substantial heterogeneity in exercise interventions, and inconsistencies in outcome measures. Therefore, no specific type, intensity, or duration of exercise can currently be recommended to patients with endometriosis as a superior form of their pain management.

The fluctuating nature of the disease requires that physical activity interventions be adapted to each patient, taking into account symptom severity, functional capacity, and personal preferences.

Future research should focus on implementing well-designed randomized controlled trials with standardized exercise protocols and longer follow-up periods, and utilizing objective outcome measures to better comprehend the role of physical activity in endometriosis.

AI

Artificial intelligence (AI) was used during the preparation of this review to assist with the analysis and synthesis of published literature, improve the clarity and comprehensibility of the manuscript, and refine the English language, grammar, and academic style. AI-generated suggestions were critically evaluated by the authors and verified against the original scientific sources. All interpretations, conclusions, and final content were reviewed and approved by the authors, who take full responsibility for the accuracy and integrity of the manuscript.

Disclosure: Authors do not report any disclosures

Authors 'contribution:
Conceptualization: Martyna Lazar
Methodology: Krzysztof Bogdański
Investigation: Michał Adamczak
Sources: Zuzanna Kruszyńska
Formal Analysis: Anastasiya Aleshchyk
Visualization: Bogumił Libura
Supervision: Szymon Baranowski
Validation: Marcel Majewski
Writing-Original Draft: Martyna Lazar
Writing-Review&Editing: Julia Lewańska
Project administration: Łukasz Szkaradowski

All authors have read and agreed with published version of the manuscript.

Funding statement: No external funding was received to perform this review.

Conflict of interest: The authors declare no conflict of interest.

Statement of institutional review board: Not applicable.

Statement of informed consent: Not applicable.

Data availability: Not applicable.

Acknowledgments: Not applicable.

References

(1) World Health Organization. Endometriosis [Internet]. World Health Organization. World Health Organization; 2023.
Available from: https://www.who.int/news-room/fact-sheets/detail/endometriosis

(2) Lamceva J, Uljanovs R, Strumfa I. The Main Theories on the Pathogenesis of Endometriosis. International Journal of Molecular Sciences [Internet]. 2023 Feb 21;24(5):4254.
Available from: https://www.mdpi.com/1422-0067/24/5/4254
https://doi.org/10.3390/ijms24054254

(3) Hoffman BL, Schorge JO, Halvorson LM, Hamid CA, Corton MM, Schaffer JI. Endometriosis. In: Williams Gynecology. 4th ed. New York: McGraw Hill Education; 2020

(4) Zondervan KT, Becker CM, Missmer SA. Endometriosis. Longo DL, editor. New England Journal of Medicine [Internet]. 2020 Mar 26;382(13):1244–56.
Available from: https://www.nejm.org/doi/full/10.1056/NEJMra1810764
https://doi.org/10.1056/NEJMra1810764

(5) Ringleb M, Florian Javelle, Haunhorst S, Bloch W, Fennen L, Baumgart S, et al. Beyond muscles: Investigating immunoregulatory myokines in acute resistance exercise – A systematic review and meta-analysis. The FASEB journal. 2024 Apr 10;38(7).
https://doi.org/10.1096/fj.202301619R

(6) Pedersen BK, Saltin B. Exercise as Medicine - Evidence for Prescribing Exercise as Therapy in 26 Different Chronic Diseases. Scandinavian Journal of Medicine & Science in Sports. 2015 Nov 25;25(s3):1–72.
https://doi.org/10.1111/sms.12581

(7) França PR de C, Lontra ACP, Fernandes PD. Endometriosis: A Disease with Few Direct Treatment Options. Molecules (Basel, Switzerland) [Internet]. 2022 Jun 23;27(13):4034.
Available from: https://pubmed.ncbi.nlm.nih.gov/35807280/
https://doi.org/10.3390/molecules27134034

(8) Lalla AT, Onyebuchi C, Jorgensen E, Clark N. Impact of lifestyle and dietary modifications for endometriosis development and symptom management. Curr Opin Obstet Gynecol. 2024;36(4):233-239.
https://doi.org/10.1097/GCO.0000000000000969

(9) Cirillo M, Argento FR, Becatti M, Fiorillo C, Coccia ME, Fatini C. Mediterranean Diet and Oxidative Stress: A Relationship with Pain Perception in Endometriosis. International Journal of Molecular Sciences [Internet]. 2023 Sep 27;24(19):14601.
Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10572576/
https://doi.org/10.3390/ijms241914601

(10) Annelotte Van Haaps, Wijbers J, Schreurs AMF, Vlek SL, Tuynman JB, B De Bie, et al. The effect of dietary interventions on pain and quality of life in women diagnosed with endometriosis: a prospective study with control group. Human Reproduction. 2023 Oct 24;38(12). https://doi.org/10.1093/humrep/dead215

(11) Pedersen BK, Febbraio MA. Muscle as an endocrine organ: focus on muscle-derived interleukin-6. Physiological reviews [Internet]. 2008;88(4):1379–406. Available from: https://www.ncbi.nlm.nih.gov/pubmed/18923185 https://doi.org/10.1152/physrev.90100.2007

(12) Petersen AMW, Pedersen BK. The anti-inflammatory effect of exercise. Journal of Applied Physiology. 2005 Apr;98(4):1154–62. https://doi.org/10.1152/japplphysiol.00164.2004

(13) Gleeson M, Bishop NC, Stensel DJ, Lindley MR, Mastana SS, Nimmo MA. The anti-inflammatory effects of exercise: mechanisms and implications for the prevention and treatment of disease. Nature reviews Immunology. 2011;11(9):607–15. https://doi.org/10.1038/nri3041

(14) Rice D, Nijs J, Kosek E, Wideman T, Hasenbring MI, Koltyn K, et al. Exercise-Induced Hypoalgesia in Pain-Free and Chronic Pain Populations: State of the Art and Future Directions. The Journal of Pain. 2019 Nov 1;20(11):1249–66. https://doi.org/10.1016/j.jpain.2019.03.005

(15) Xie M, Qing X, Huang H, et al. The effectiveness and safety of physical activity and exercise on women with endometriosis: A systematic review and meta-analysis. PLoS One. 2025;20(2):e0317820. https://doi.org/10.1371/journal.pone.0317820

(16) Tennfjord MK, Gabrielsen R, Tellum T. Effect of physical activity and exercise on endometriosis-associated symptoms: a systematic review. BMC Women's Health. 2021;21(1):355. https://doi.org/10.1186/s12905-021-01500-4

(17) Gabrielsen R, Tellum T, Bø K, Engh ME, Frawley H, Tveito SN, Tennfjord MK. Supervised exercise and pelvic floor muscle training eases current pelvic and genital pain but not worst pelvic and genital pain in women with endometriosis: a randomized trial. J Physiother. 2025;71(4):246-253. https://doi.org/10.1016/j.jphys.2025.09.012

(18) Merete Kolberg Tennfjord, Gabrielsen R, Bø K, Marie Ellström Engh, Molin M. Can general exercise training and pelvic floor muscle training be used as an empowering tool among

women with endometriosis? Experiences among women with endometriosis participating in the intervention group of a randomized controlled trial. BMC Women s Health. 2024 Sep 12;24(1). https://doi.org/10.1186/s12905-024-03356-w

(19) World Health Organization. WHO guidelines on physical activity and sedentary behaviour [Internet]. World Health Organisation. 2020.
Available from: https://www.who.int/publications/i/item/9789240015128

(20) Gambadauro P, Carli V, Hadlaczky G. Depressive symptoms among women with endometriosis: a systematic review and meta-analysis. Am J Obstet Gynecol. 2019;220(3):230-241.e1.
https://doi.org/10.1016/j.ajog.2018.11.123