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Exercise Programming for Women with Endometriosis: A Narrative Review of Training Modalities and Dose Parameters

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Abstract

Background:

Endometriosis causes pelvic pain and fatigue, impairing physical fitness and sports participation. While physical activity helps manage symptoms, precise exercise programming guidance remains limited.

Aim:

This narrative review evaluates sports science and clinical evidence relevant to individualized exercise programming for women with endometriosis.

Material and methods:

PubMed was the principal database, supplemented by Google Scholar and Scopus. The search covered publications from 2016–2026, including systematic reviews, meta-analyses, interventional studies, and guidelines. Evidence was classified as direct, component (multimodal), or extrapolated.

Results:

A favourable signal arises from progressive multimodal physical activity programmes, though evidence certainty is low and active components cannot be isolated. Yoga and assessment-guided pelvic floor training have direct, population-specific support. No validated endometriosis-specific FITT (Frequency, Intensity, Time, Type) training protocol is

established. Modality selection should reflect dominant symptoms, pelvic floor findings, and responses to physical loading.

Conclusions:

Targeted physical activity is a valuable management component, but a universal training prescription is currently unjustified. A symptom-responsive framework is offered to guide exercise professionals; comparative dose-finding sports science trials are required before firm recommendations can be made.

Keywords:

endometriosis; physical activity; pelvic pain; quality of life; rehabilitation; exercise therapy

1. Introduction

Despite advances in the diagnosis and treatment of endometriosis, many women continue to experience persistent pain and impaired quality of life despite standard medical or surgical management. This clinical reality has increased interest in supportive strategies that extend beyond pharmacological and surgical treatment and address the broader physical and psychosocial consequences of the disease. Among these approaches, physical activity has emerged as a promising, low-cost, and widely accessible intervention that may complement conventional treatment and improve patient outcomes.^{1,2}

Endometriosis is a chronic, oestrogen-dependent inflammatory disease characterised by the presence of endometrial-like tissue outside the uterine cavity. It affects approximately 10% of women of reproductive age worldwide and is a major cause of chronic pelvic pain, dysmenorrhea, dyspareunia, and infertility.³ However, its burden extends well beyond gynaecological symptoms. Endometriosis is increasingly recognised as a chronic systemic condition associated with inflammation, altered pain processing, fatigue, psychological distress, reduced work productivity, and substantial deterioration in health-related quality of life.^{3,4}

Physical activity has increasingly been examined as an adjunct to conventional endometriosis management.^{1,2} Recent reviews—including two published in *Quality in Sport*—have already discussed symptom effects, quality of life, exercise variables, and personalisation.^{5,6} The

remaining question addressed here is narrower: which prescription decisions are supported directly, which rely on inseparable multimodal packages, and where dose, progression, supervision, pelvic floor assessment, and flare modification remain unsupported.

2. Aim and Methods

This review examines a narrower prescription-level problem: how published interventions describe modality, dose, progression, supervision, and symptom-responsive modification, and how confidently outcomes can be attributed to individual components. By explicitly separating direct endometriosis-specific evidence from multimodal component evidence and mechanistic or chronic-pain extrapolation, this approach reduces the overinterpretation of biological plausibility. It highlights which prescription elements have direct clinical support and which remain research questions, with certainty considered separately from attribution. The resulting framework is provisional and is not validated clinical guidance.

2.1. Aim

Because recent meta-analyses have demonstrated extreme methodological heterogeneity across exercise interventions in this population, a narrative evidence map was specifically chosen over a systematic quantitative review. This approach allows for the qualitative conceptual separation of direct modality evidence from multimodal component evidence, facilitating the construction of a pragmatic clinical decision framework that current statistical pooling cannot provide.

2.2. Search Strategy

A narrative literature search was conducted with PubMed as the principal biomedical database. The principal Boolean combination was ("endometriosis"[Title/Abstract] OR "endometriosis"[Medical Subject Headings (MeSH) Terms]) AND ("exercise"[Title/Abstract] OR "physical activity"[Title/Abstract] OR "therapeutic exercise"[Title/Abstract] OR "pelvic floor physiotherapy"[Title/Abstract] OR "yoga"[Title/Abstract] OR "rehabilitation"[Title/Abstract] OR "rehabilitation" [MeSH Terms]). Google Scholar supported backward and forward citation tracking and identification of journal-specific publications, while Scopus was used for supplementary cross-checking. The search was updated through July 2026.

2.3. Evidence Selection and Hierarchy

Eligible evidence was organised into three levels.

Tier 1 comprised direct endometriosis-specific clinical evidence, prioritising randomised controlled trials, controlled studies, and prospective exercise or rehabilitation interventions.

Tier 2 comprised systematic reviews, meta-analyses, clinical guidelines, and consensus documents relevant to exercise, rehabilitation, pelvic pain, or multidisciplinary management.

Tier 3 comprised indirect mechanistic or chronic-pain evidence and was used when endometriosis-specific data were unavailable. These tiers describe the role and proximity of evidence to the prescription question rather than a formal hierarchy of methodological quality. Older studies were retained when they represented the principal direct evidence for a modality. Studies were included when they evaluated structured physical activity, exercise, therapeutic exercise, or physical rehabilitation in women with endometriosis and reported pain, quality of life, physical function, fatigue, mental health, pelvic floor function, adherence, or safety. Epidemiological exposure studies, protocols without outcome data, and reports without a structured exercise or rehabilitation component were not used to support prescription conclusions.

Potentially relevant records were screened for direct relevance to the prescription question, with full texts reviewed when titles or abstracts were insufficient for classification. Duplicate records were removed, and multiple publications from the same intervention cohort were treated as one intervention family; thus, the primary Physio-EndEA report and its secondary analysis^{7,8} were not counted as independent interventions.

2.4. Exercise-Prescription Evidence Framework

Exercise studies were evaluated by:

- modality, frequency, and intensity;
- session and programme duration;
- progression;
- supervision;
- individualisation;
- symptom-related modification;
- pelvic floor content;
- adherence;
- safety;
- follow-up.

Attribution was labelled direct when a distinct intervention was evaluated, a component when an element belonged to a multimodal programme and could not be isolated, or extrapolated when the rationale depended mainly on general exercise physiology or chronic-pain literature. These labels describe attribution, not certainty. Certainty was interpreted qualitatively from design, sample size, consistency, reporting, and review-level risk-of-bias assessments. No PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow count was generated, and no independent study-level risk-of-bias assessment was undertaken. SANRA (Scale for the Assessment of Narrative Review Articles) principles informed the review structure but was not used as a formal compliance claim.

2.5. What This Review Adds

Recent Quality in Sport reviews addressed broad symptom effects, quality of life, exercise modalities, and personalisation,^{5,6} while a 2025 review emphasised pain and biological mechanisms.⁹ The present review instead maps the evidence available for prescription decisions, separating distinct-modality findings from multimodal component evidence and mechanistic extrapolation. Its added value is the attribution framework and clinical decision matrix (Table 2.), not another global estimate of benefit.

3. Clinical Context Relevant to Exercise Prescription

While the systemic and heterogeneous burden of endometriosis is well established, a key clinical challenge is that symptom severity often does not correspond to anatomical disease extent.¹⁰⁻²⁰ Therefore, from the perspective of exercise prescription, the most critical variables are not merely the diagnostic labels, but the functional limitations: the dominant symptom pattern, baseline fatigue, movement-related pain, pelvic floor dysfunction, treatment status, physical capacity, and symptom fluctuation over time.

Hormonal, inflammatory, oxidative, peripheral, and central pain mechanisms may contribute to these symptoms.^{10,12-15} These mechanisms provide context for exercise research but do not by themselves establish that physical activity modifies lesions or disease progression.

4. Evidence Rationale for Physical Activity

Exercise may influence systemic inflammation, sex-steroid metabolism, oxidative balance, endogenous pain modulation, physical capacity, and pain-related cognition.²¹⁻²⁵ In

endometriosis, these mechanisms remain biologically plausible rather than proven lesion-level effects. Exercise improves depressive symptoms in general populations,²⁶ but endometriosis-specific psychological evidence is smaller and largely comes from multimodal programmes.^{7,8} Direct clinical evidence is therefore most appropriately interpreted as a low-certainty signal for patient-reported symptoms and function.

Pelvic floor dysfunction in endometriosis is highly heterogeneous, potentially involving overactivity, impaired relaxation, poor coordination, weakness, or mixed findings.²⁷⁻²⁹ Due to this complexity, this review uses mechanistic evidence primarily as context, basing its prescription conclusions strictly on endometriosis-specific clinical outcomes rather than assumed anatomical deficits.

5. Evidence Map for Exercise-Prescription Decisions

Recent reviews have already summarised overall effects on pain and quality of life.^{2,5,6,9} This section therefore interprets interventions as direct modality evidence, component evidence within multimodal programmes, or mechanistic extrapolation. It is focused on what outcomes can be attributed to a specific exercise component.^{2,30}

5.1. Aerobic and resistance components: what can be attributed?

Aerobic and resistance exercises are supported mainly by component evidence because they are usually embedded within multimodal rehabilitation programmes and their independent effects cannot be isolated. In the small Physio-EndEA trial, nine weeks of supervised aerobic, resistance, stretching, and lumbopelvic exercise improved several patient-reported and physical outcomes.^{7,8} Gabrielsen et al. similarly combined endurance, strengthening, flexibility, relaxation, and pelvic floor training; current pelvic/genital pain improved at four months and remained lower at 12 months, whereas worst pain did not.²⁷ These studies support a favourable multimodal rehabilitation signal, but not modality-specific efficacy.

5.2. Stand-alone modalities: where direct evidence exists

Among the limited stand-alone modalities identified, yoga has direct evidence from one small trial. An eight-week Hatha yoga programme in 40 women was associated with lower daily pelvic pain and improvements across several Endometriosis Health Profile-30 domains.³¹ The

intervention combined postures, breathing, and relaxation, so the active element cannot be isolated. Evidence for Pilates and aquatic exercise remains insufficient and should be considered extrapolated rather than direct: no robust endometriosis-specific randomised trial was identified in recent reviews.^{2,29,30} Stretching is commonly embedded in multimodal programmes, but its independent effect is unknown.^{7,27,32} A small digital-exercise pilot suggested feasibility but found no significant between-group pain effect.³³

5.3. Assessment-guided and multimodal rehabilitation

Pelvic floor physiotherapy has direct but population-specific evidence. In a small trial of nulliparous women with deep infiltrating endometriosis and superficial dyspareunia, targeted physiotherapy improved levator hiatal relaxation and superficial dyspareunia.²⁸ However, these findings do not generalise to all patients. Given the varied clinical presentations, this evidence strongly supports assessment-guided rehabilitation tailored to the individual, rather than default routine strengthening.

The strongest contemporary signal concerns multimodal programmes, which provide component-level rather than modality-specific evidence for their individual exercise elements. Physio-EndEA combined stabilisation, stretching, aerobic, and resistance exercise,^{7,8} while a 2026 trial combined therapeutic exercise with pain neurophysiology education and improved health-related quality of life at post-treatment and three-month follow-up.³⁴ These programmes are clinically relevant but do not identify the active contribution of each component; they support multimodal rehabilitation as a clinical and research direction rather than establish a universally superior modality. Key interventional studies are summarised in Table 1. To turn these findings into practical advice, Table 2 presents a clinical decision matrix summarizing key exercise parameters such as modality, dose, and progression.

Table 1. Characteristics of key interventional studies evaluating exercise and physical rehabilitation in women with endometriosis.

Study	Design	Participants	Intervention	Frequency / intensity	Length	Main outcomes and findings	Attribution status
Gonçalves et al. ³¹	RCT	40 women	Hatha yoga	90 min, 2x/week	8 weeks	Lower daily pelvic pain; improved several EHP-30 QoL domains; no significant menstrual-pattern difference.	Direct

Awad et al. ³²	Single-group repeated measures	20 women	General exercise programme	Guideline-based exercise; exact dose incompletely reported	8 weeks	Reduced pelvic pain and thoracic kyphosis; uncontrolled design limits inference.	Direct
Artacho-Cordón et al. ^{7,8}	RCT	31 women	Multimodal Physio-EndEA: stabilisation, stretching, aerobic and resistance exercise	Supervised, progressive, individually adapted	9 weeks	Improved: QoL, pressure pain thresholds, dyspareunia, strength, stability, fatigue, fitness and selected mental-health outcomes.	Component
Lutfi et al. ³³	Pilot RCT	22 women	Single telehealth- or VR-delivered exercise session	Single supervised or self-managed session	1 session	No significant between-group pain difference; preliminary signal of acute symptom change and feasibility.	Direct
Gabrielsen et al. ²⁷	RCT	81 women	General exercise + pelvic floor muscle training	Weekly supervised + home exercise 2–3x/week	4 months	Improved current pelvic/genital pain at 4 and 12 months; no significant improvement in worst pain.	Component
Abril-Coello et al. ³⁴	RCT	40 women	Therapeutic exercise + pain neurophysiology education	24 combined sessions	8 weeks	Improved HRQoL post-treatment and at 3 months; exploratory improvements in abdominal muscle thickness and menstrual symptoms.	Component
Del Forno et al. ²⁸	RCT	34 nulliparous women with deep infiltrating endometriosis and superficial dyspareunia	Individual pelvic floor physiotherapy	Five 30-min sessions at weeks 1, 3, 5, 8 and 11	11 weeks	Improved relaxation and superficial dyspareunia; selected population limits generalisability.	Direct

RCT (Randomized Controlled Trial); QoL (Quality of Life); HRQoL (Health-Related Quality of Life) Note: Attribution status describes whether an effect can be assigned to a distinct intervention, a component of a multimodal programme, or extrapolated evidence. It does not denote certainty; even direct evidence may remain low or very low certainty because of sample size and design.

Table 2. Prescription-level evidence matrix for clinical decision-making.

Prescription decision	Direct evidence	Component evidence	Qualitative confidence	Current inference
Modality selection	Yoga ³¹ ; selected pelvic-floor physiotherapy ²⁸	Aerobic and resistance exercise mainly within multimodal programmes ^{7,8,27,34}	Low–very low	No superior modality established
Frequency and duration	Yoga: 2x/week for 8 weeks ³¹	Programmes ranged from 8 weeks to 4 months ^{7,8,27,34}	Very low	Reported schedules are examples, not thresholds

Intensity and progression	No comparative dose trial	Progressive or adapted; loading reported incompletely ^{7,27,30,35}	Very low	No endometriosis-specific intensity or progression rule
Supervision and adherence	Supervised trials show feasibility ^{7,8,27}	Adherence and adverse events reported inconsistently ^{2,30,36}	Low	Independent effect of supervision is uncertain
Pelvic-floor assessment	Selected direct evidence ²⁸	Pelvic-floor training embedded in general exercise ²⁷	Low	Assess overactivity, relaxation and coordination; do not default to strengthening
Flare-up modification and safety	No direct comparative evidence	General chronic-pain exercise and pacing literature ^{37,38}	Very low	No validated endometriosis-specific flare protocol

Note: Qualitative confidence was judged narratively from study design, sample size, consistency, completeness of reporting, and review-level risk-of-bias assessments. “Low” indicates a direct but limited or inconsistent signal; “very low” indicates evidence from a single small or uncontrolled study, indirect or extrapolated evidence, or incomplete reporting. These categories are not formal GRADE (Grading of Recommendations Assessment, Development and Evaluation) ratings.

6. Provisional Evidence-Informed Decision Framework

Because current evidence does not support a single, universally superior exercise modality for endometriosis, clinical prescription must be symptom-responsive. The following four steps, summarized visually in Figure 1, offer a practical framework to help clinicians select modalities, adjust dosing, and manage flare-ups safely.

6.1. Step 1: define the dominant limitation

No single modality has been shown superior for all women with endometriosis. A provisional choice may be organised around the dominant limitation: aerobic activity may be acceptable for deconditioning and fatigue; resistance and lumbopelvic exercise may be relevant when weakness or impaired function predominates. If severe dyspareunia or specific pelvic floor symptoms are the primary complaint, targeted pelvic floor rehabilitation should be the initial focus.^{7,27,28}

6.2. Step 2: select dose and progression rules

Reported schedules range from two weekly 90-minute yoga sessions to nine-week supervised multimodal programmes and four-month programmes combining weekly supervision with home exercise.^{7,27,31} Because workload and progression are incompletely reported,^{2,7,30} these schedules should be treated as examples: document the starting dose and adjust frequency, intensity, and duration according to symptom response and functional tolerance.

6.3. Step 3: identify modifiers and flare-up rules

Prescription must account for symptom fluctuation and specific anatomical findings. For example, general pelvic floor exercise should not automatically mean routine strengthening. Because physical examination often reveals overactivity, impaired relaxation, or poor coordination rather than simple weakness, examination-guided rehabilitation is strongly preferable to generic training.^{27,28} Furthermore, during symptom flare-ups, clinicians should consider temporary reductions in load, duration, range, or complexity when movement remains tolerable, extrapolating from chronic-pain pacing literature.^{37,38}

6.4. Step 4: apply stop and reassessment criteria

Endometriosis itself is not a general contraindication to exercise. Because adverse-event reporting is incomplete,^{2,27,29} clinicians should modify activity or seek medical reassessment:

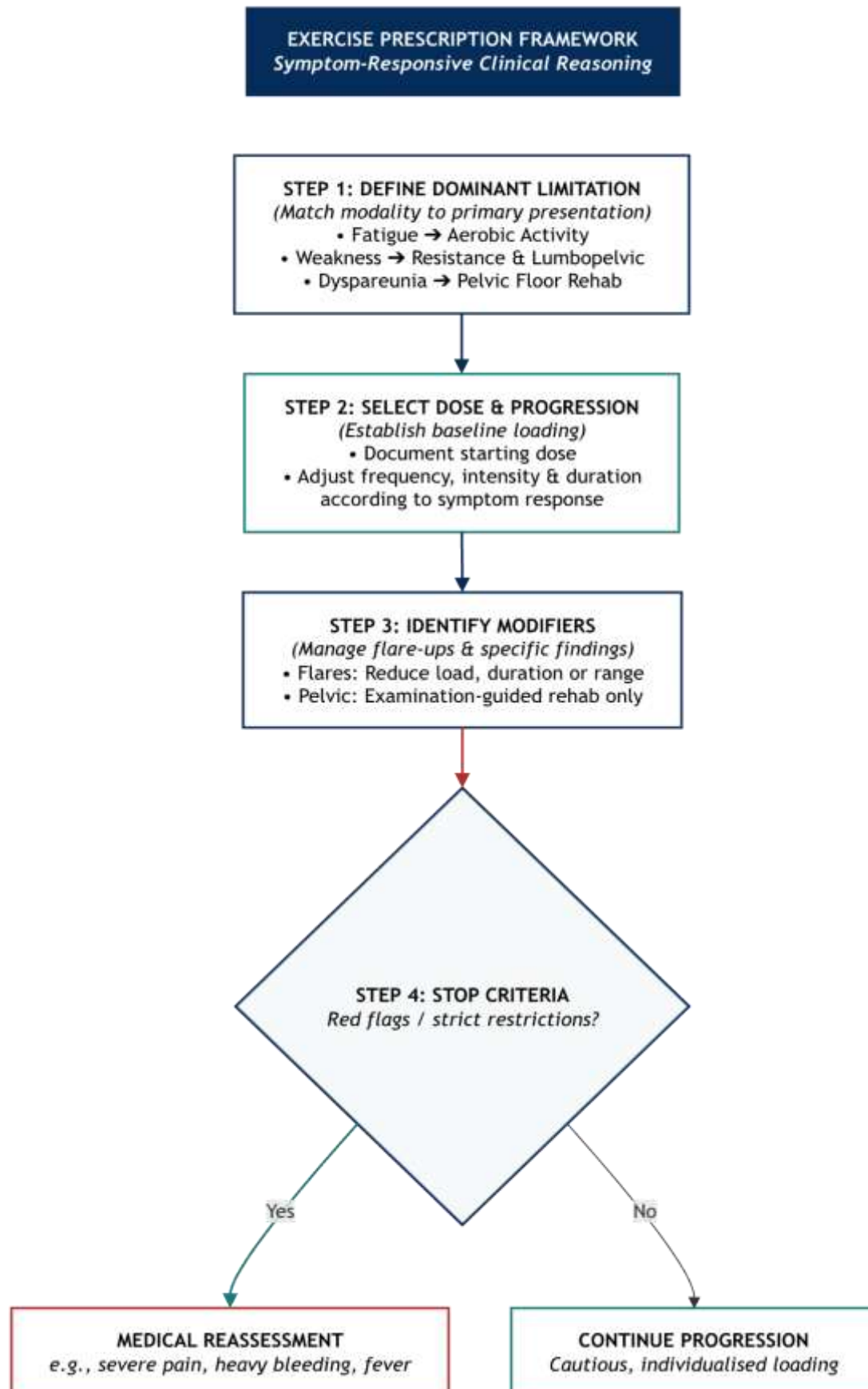
- after surgery,
- during fertility-treatment restrictions,

or when alarm symptoms occur such as:

- new severe pain,
- unexplained heavy bleeding,
- syncope,
- fever,
- or marked anaemia-related symptoms.^{3,39,40}

These are general medical reassessment criteria rather than validated endometriosis-specific exercise stop rules.

Figure 1. Provisional evidence-informed decision framework for individualised exercise prescription.



7. Implementation Pathway for an Individualised Exercise Trial

7.1. Establish boundary conditions

Before exercise selection, clinicians should clarify postoperative or fertility-treatment restrictions, current disease-directed treatment, the dominant symptom and functional limitation, baseline activity, and pelvic floor findings when relevant.^{12,27,28,39-42} This step defines whether general exercise, targeted rehabilitation, or medical reassessment is the appropriate starting point.

7.2. Select a testable starting prescription

One primary functional target and an acceptable modality may be selected, while baseline frequency, intensity, session duration, symptom response, adherence, and adverse events are documented. Subsequent adjustment should be cautious and individualised. No endometriosis-specific evidence defines an optimal increment, progression interval, or rule for changing one versus several dose variables.^{2,7,27,30,36}

7.3. Reassess and route care

Reassessment should include the most troublesome symptom, pain burden, physical function, fatigue, participation, adherence, and adverse events.⁴³⁻⁴⁵ Symptom improvement justifies gradual progression. Conversely, persistent dyspareunia, pelvic floor overactivity, or movement-related pain supports referral for targeted physiotherapy. If any red-flag criteria identified in Step 4 (Section 6.4) emerge (e.g., severe acute pain, heavy bleeding, or fever), physical activity must be paused for prompt medical evaluation.^{3,39,40} Ultimately, this pathway serves as a structured, flexible guide to help clinicians adapt exercise prescription safely and effectively.

8. Limits of Prescription-Level Inference

Prescription-level inference is limited by small samples, heterogeneous interventions and outcomes, and multimodal programmes that prevent attribution to individual components.^{2,29,30,46,47} Heterogeneity exceeded 90% for several outcomes in the 2026 meta-analysis by Mena-González et al.⁴⁷

Dose variables, progression, supervision, adherence, adverse events, and long-term outcomes are inconsistently reported, with almost no head-to-head dose or modality comparisons.^{2,7,27,30,48} As a narrative synthesis rather than a PRISMA-guided systematic review, formal study-level risk-of-bias assessments were not performed, and some eligible reports may have been missed. More importantly, current primary literature lacks robust dose-finding trials. Accordingly, available evidence supports neither a standardised endometriosis-specific Frequency, Intensity, Time, and Type (FITT) prescription nor strong modality-specific recommendations.

9. Research Priorities for Prescribable Evidence

Future research should move from asking whether exercise is beneficial to determining which intervention works best for which patient. Larger multicentre trials should compare clearly defined modalities and stratify participants by dominant symptoms, pelvic floor findings, treatment status, baseline fitness, and pain sensitisation.^{2,30,46-48} Dose-finding and head-to-head studies are particularly needed to compare frequency, intensity, duration, supervision, and progression, while factorial designs could separate the effects of exercise from education, pelvic floor therapy, and relaxation.

Reporting should be standardised. The Consensus on Exercise Reporting Template (CERT) provides a framework for exercise dose, progression, supervision, tailoring, adherence, and adverse events.³⁶ Outcomes should also align with endometriosis core outcome recommendations and include pain, quality of life, treatment satisfaction, physical function, fatigue, sexual function, work participation, adherence, and objective physical activity.⁴³⁻⁴⁵

Longer follow-up is needed to assess sustained participation, recurrence of symptoms, and real-world adherence. Selected trials should also incorporate inflammatory, hormonal, oxidative, and neurophysiological biomarkers to test proposed mechanisms rather than infer them from general exercise physiology. A 2026 exercise-specific systematic review and meta-analysis of randomised trials further supports this need: although pooled pain outcomes favoured exercise, the included studies had high risk of bias, low certainty, substantial heterogeneity, and no

significant benefit for several specific pain domains, reinforcing the need for better-powered and better-reported exercise trials.⁴⁹

10. Conclusions

Exercise may be considered as an adjunct to conventional endometriosis care, with the most consistent signal arising from progressive, supervised, and often multimodal programmes. Yoga and assessment-guided pelvic floor rehabilitation have limited direct, population-specific support, while no modality has been shown superior.

A practical approach is to clarify treatment-related restrictions, identify the dominant symptom and functional presentation, assess pelvic floor findings when relevant, document an acceptable starting prescription, and modify loading according to response. The framework is intended to support clinical reasoning rather than function as a validated algorithm.

Comparative and dose-finding trials should use standardised outcomes, report progression and adverse events clearly, stratify participants by clinically relevant presentations, and include longer follow-up.

Disclosure

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References

1. McKnight K, Omotosho O, Jassim S, Cotter A. Exercise and endometriosis—is there a promising future? A narrative review. *Ir J Med Sci.* 2024;193(5):2375-2387.
2. 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.
3. Becker CM, Bokor A, Heikinheimo O, et al. ESHRE guideline: endometriosis. *Hum Reprod Open.* 2022;2022(2):hoac009.
4. Taylor HS, Kotlyar AM, Flores VA. Endometriosis is a chronic systemic disease: clinical challenges and novel innovations. *Lancet.* 2021;397(10276):839-852.
5. Papież M, Bartkiewicz K, Jędra Z, et al. The role of physical activity in managing endometriosis: a comprehensive review. *Quality in Sport.* 2026;55:71029. doi:10.12775/QS.2026.55.71029
6. Chrobak A, Bessmylna K, Kravets A, et al. Impact of physical activity on symptoms and quality of life in women with endometriosis: a narrative review. *Quality in Sport.* 2026;55:70924. doi:10.12775/QS.2026.55.70924
7. Artacho-Cordón F, Salinas-Asensio MDM, Galiano-Castillo N, et al. Effect of a multimodal supervised therapeutic exercise program on quality of life, pain, and lumbopelvic impairments in women with endometriosis unresponsive to conventional therapy: a randomized controlled trial. *Arch Phys Med Rehabil.* 2023;104(11):1785-1795.
8. Salinas-Asensio MDM, Álvarez-Salvago F, Mundo-López A, et al. Changes in fatigue, health-related fitness, sleep quality, mental health, gastrointestinal complaints and sexual function after a multimodal supervised therapeutic exercise program in women with endometriosis unresponsive to conventional therapy: a secondary analysis of a randomized controlled trial. *Eur J Obstet Gynecol Reprod Biol.* 2025;312:114083.
9. Bąk E, Michałka D, Papachristoforou N, et al. The role of physical activity in reducing endometriosis pain. *Quality in Sport.* 2025;37:56929. doi:10.12775/QS.2025.37.56929
10. Crump J, Suker A, White L. Endometriosis: a review of recent evidence and guidelines. *Aust J Gen Pract.* 2024;53(1-2):11-18.
11. Harder C, Voltolini Velho R, Brandes I, Sehouli J, Mechsner S. Assessing the true prevalence of endometriosis: a narrative review of literature data. *Int J Gynaecol Obstet.* 2024;167(3):883-900.
12. Griffiths MJ, Horne AW, Gibson DA, Roberts N, Saunders PTK. Endometriosis: recent advances that could accelerate diagnosis and improve care. *Trends Mol Med.* 2024;30(9):875-889.
13. Wang K, He D, Wang Y, Liu X, Liu L. Endometriosis: epidemiology, risk factors, molecular mechanisms, diagnosis, and management. *MedComm (2020).* 2026;7(7):e70852.
14. Oală IE, Mitranovici MI, Chiorean DM, et al. Endometriosis and the role of pro-inflammatory and anti-inflammatory cytokines in pathophysiology: a narrative review of the literature. *Diagnostics (Basel).* 2024;14(3):312.

15. Perrone U, Barra F, Anatrà M, et al. Targeting inflammation in endometriosis: emerging therapeutic options. *Expert Opin Investig Drugs*. 2025;34(12):995-1009.
16. Ramin-Wright A, Schwartz ASK, Geraedts K, et al. Fatigue—a symptom in endometriosis. *Hum Reprod*. 2018;33(8):1459-1465.
17. Elizur SE, Mostafa J, Berkowitz E, Orvieto R. Endometriosis and infertility: pathophysiology, treatment strategies, and reproductive outcomes. *Arch Gynecol Obstet*. 2025;312(4):1037-1048.
18. Sokteang S, Tran C, Ou P, Ouk C, Pirtea P, de Ziegler D. Clinical management of infertility associated with endometriosis. *J Obstet Gynaecol Can*. 2024;46(6):102409.
19. Maulenkul T, Kuandyk A, Makhadiyeva D, et al. Understanding the impact of endometriosis on women's life: an integrative review of systematic reviews. *BMC Womens Health*. 2024;24:524.
20. Bień A, Pokropska A, Grzesik-Gąsior J, et al. Clinical factors affecting the quality of life of women with endometriosis. *J Adv Nurs*. 2025;81(8):4667-4680.
21. Bettariga F, Taaffe DR, Galvão DA, et al. Exercise training mode effects on myokine expression in healthy adults: a systematic review with meta-analysis. *J Sport Health Sci*. 2024;13(6):764-779.
22. Ringleb M, Javelle F, Haunhorst S, et al. Beyond muscles: investigating immunoregulatory myokines in acute resistance exercise—a systematic review and meta-analysis. *FASEB J*. 2024;38(7):e23596.
23. Shahid W, Noor R, Bashir MS. Effects of exercise on sex steroid hormones (estrogen, progesterone, testosterone) in eumenorrheic females: a systematic review and meta-analysis. *BMC Womens Health*. 2024;24(1):354.
24. Powers SK, Lategan-Potgieter R, Goldstein E. Exercise-induced Nrf2 activation increases antioxidant defenses in skeletal muscles. *Free Radic Biol Med*. 2024;224:470-478.
25. Chen KK, Rolan P, Hutchinson MR, Dickson C, de Zoete RMJ. Exercise-induced changes in central sensitization outcomes in individuals with chronic musculoskeletal pain: a systematic review with meta-analysis. *Eur J Pain*. 2024;28(9):1431-1449.
26. Noetel M, Sanders T, Gallardo-Gómez D, et al. Effect of exercise for depression: systematic review and network meta-analysis of randomised controlled trials. *BMJ*. 2024;384:e075847.
27. Gabrielsen R, Tellum T, Bø K, et al. 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 randomised trial. *J Physiother*. 2025;71(4):246-253.
28. Del Forno S, Arena A, Pellizzone V, et al. Assessment of levator hiatal area using 3D/4D transperineal ultrasound in women with deep infiltrating endometriosis and superficial dyspareunia treated with pelvic floor muscle physiotherapy: randomized controlled trial. *Ultrasound Obstet Gynecol*. 2021;57(5):726-732.
29. Rodríguez-Ruiz Á, Sierra-Artal B, Lozano-Lozano M, Artacho-Cordón F. Impact of physical rehabilitation on endometriosis and adenomyosis-related symptoms: a systematic review and meta-analysis. *J Clin Med*. 2025;14(23):8284.

30. Tennfjord MK, Gabrielsen R, Tellum T. Effect of physical activity and exercise on endometriosis-associated symptoms: a systematic review. *BMC Womens Health*. 2021;21(1):355.
31. Gonçalves AV, Barros NF, Bahamondes L. The practice of Hatha yoga for the treatment of pain associated with endometriosis. *J Altern Complement Med*. 2017;23(1):45-52.
32. Awad E, Ahmed HAH, Yousef A, Abbas R. Efficacy of exercise on pelvic pain and posture associated with endometriosis: within subject design. *J Phys Ther Sci*. 2017;29(12):2112-2115.
33. Lutfi M, Dalleck LC, Drummond C, et al. A single session of a digital health tool-delivered exercise intervention may provide immediate relief from pelvic pain in women with endometriosis: a pilot randomized controlled study. *Int J Environ Res Public Health*. 2023;20(3):1665.
34. Abril-Coello R, Jiménez-Del-Barrio S, Dávila Marcos A, Pardos-Aguilella P, Corretero-León M, Ceballos-Laita L. Therapeutic exercise and pain neurophysiology education in quality of life and abdominal wall muscle thickness of women with endometriosis: a randomized controlled trial. *Eur J Obstet Gynecol Reprod Biol*. 2026;325:115275.
35. Hartmann TE, Baker KA, Girard D. Is exercise duration more important than intensity in endometriosis? *BMC Womens Health*. 2025;25(1):625.
36. Slade SC, Dionne CE, Underwood M, et al. Consensus on Exercise Reporting Template (CERT): modified Delphi study. *Phys Ther*. 2016;96(10):1514-1524.
37. Ninneman JV, Roberge GA, Stegner AJ, Cook DB. Exercise training for chronic pain: available evidence, current recommendations, and potential mechanisms. *Curr Top Behav Neurosci*. 2024;67:329-366.
38. Attali D, Leguay F, Milcent L, Baeza-Velasco C. Association between activity pacing and negative emotions in patients with chronic pain: a systematic review. *Clin J Pain*. 2023;39(8):426-435.
39. Fritel X, Chabbert-Buffet N, Brillac T, et al. Clinical practice guidelines for pelvic pain associated with endometriosis: a consensus-based approach by CNGOF & Convergences PP. *Gynecol Obstet Fertil Senol*. 2025;53(11):536-547.
40. Allaire C, Yong PJ, Bajzak K, et al. Guideline No. 445: management of chronic pelvic pain. *J Obstet Gynaecol Can*. 2024;46(1):102283.
41. Fang QY, Campbell N, Mooney SS, Holdsworth-Carson SJ, Tyson K. Evidence for the role of multidisciplinary team care in people with pelvic pain and endometriosis: a systematic review. *Aust N Z J Obstet Gynaecol*. 2024;64(3):181-192.
42. Can G, Pinto Amorim das Virgens I, Fehér B, et al. Physiotherapy for endometriosis-associated pelvic pain: a systematic review and meta-analysis. *Pain Med*. 2026;27(1):95-103.
43. Duffy JMN, Hirsch M, Vercoe M, et al. A core outcome set for future endometriosis research: an international consensus development study. *BJOG*. 2020;127(8):967-974.
44. Nicolas-Boluda A, Le Roux E, Tavenet A, et al. Developing a set of patient-centered outcomes for routine use in endometriosis: an international Delphi study. *Acta Obstet Gynecol Scand*. 2024;103(1):138-152.

45. Rosenberger DC, Mennicken E, Schmieg I, et al. A systematic literature review on patient-reported outcome domains and measures in nonsurgical efficacy trials related to chronic pain associated with endometriosis: an urgent call to action. *Pain*. 2024;165(11):2419-2444.
46. Fuentes Rodríguez A, Grela Beres Ó. Influence of diet and physical exercise on endometriosis: a systematic review. *Rev Cuid*. 2026;17(1):e5426.
47. Mena-González A, Leirós-Rodríguez R, Hernandez-Lucas P. Effectiveness of physical therapy techniques and methods in the management of endometriosis symptoms: a systematic review with meta-analysis. *Braz J Phys Ther*. 2026;30(4):101620.
48. Zheng X, Wang Y, Li H, et al. Comparative effectiveness of non-pharmacological interventions for pain and quality of life in women with endometriosis: a systematic review and network meta-analysis. *J Pain Res*. 2026;19:577080.
49. Moretti-Chaves DAK, Pucci IM, Zaninelli TH, Casonatto J, Borghi SM. Physical exercise interventions for endometriosis-related pain symptoms in randomized controlled trials: a systematic review and meta-analysis. *J Endometr Pelvic Pain Disord*. Published online May 15, 2026. doi:10.1177/22840265261446823