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Yoga vs. Walking Which One is More Effective for Postpartum Depression: A Systematic Review

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Postpartum depression (PPD) affects up to 27.6% of mothers worldwide, potentially exerting adverse effects on the health of both mother and child. Physical activities such as yoga and walking may offer benefits in managing PPD. Although both yoga and walking have been examined as interventions for postpartum depression, no systematic review has directly compared their relative effectiveness. This study seeks to review and compare these two interventions in mitigating postpartum depression. A systematic review has been registered in PROSPERO (CRD420251141136). The review was conducted according to PRISMA guidelines through PubMed, Embase, Scopus, and MEDLINE. The search date range is between 2000 and 2024. We used the Cochrane risk of bias tool (RoB 1) and ROBINS-I to assess the quality of the included studies, using keywords such as postpartum depression, yoga, and walking. Articles that met the inclusion criteria were studies with RCT or quasi-experimental designs. Result of the 10 studies analyzed, yoga consistently showed significant reductions in postpartum depression scores ($p < 0.05$), improved coping, and emotional well-being. Walking was effective for managing depressive symptoms in certain groups, especially when done in the community. However, the results were not significant due to low adherence. Yoga is more effective in managing PPD, especially in mothers with major depression. Walking is relevant as an adjunct, especially for mothers with mild depression symptoms. The combination of yoga and walking may provide maximum benefits for postpartum mothers.

Keywords: exercise, yoga, walking, postpartum depression

Introduction

A mother who has given birth will experience a new adjustment to life where a mother will have a child who needs to be nurtured and cared for until the child is an adult. New mothers are often illustrated with a period of fun and happiness. The happiness that arises in new mothers will bring feelings of indecision due to the adjustment phase and the many stressors that occur in new mothers, such as physical return to its original state before pregnancy, adjustment

to new tasks, changes in relationships bound by marriage and dealing with new families, financial pressures or job transitions.¹ Every mother has risk factors that create mental conditions, such as baby blues syndrome or the ongoing mental disorder of postpartum depression, including anxiety.¹

As many as 20% of postpartum mothers in the world experience Postpartum Depression with signs, mental health disorders, depression, and anxiety starting during pregnancy to after childbirth up to 52 weeks postpartum. Mothers

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with postpartum depression (PPD) are characterized by severe anxiety to the point of attempting self-harm and even suicide.² Global average prevalence of postpartum depression is 27.6%, while perinatal and antenatal depression are 26.3% and 28.5%, respectively.³ Women with a history of depression and women who have a low economy have a greater risk.⁴ Mothers who experience postpartum depression can be detrimental to the health of their children both physically and mentally; besides that, it will interfere with the growth and development of children.⁵

One of the effective interventions for postpartum women who experience anxiety or depression is to do regular physical activity.⁶ Regular physical activity can improve physical and mental health and prevent premature death.⁷ In the postpartum period, mothers need to do regular physical activity to help speed up physical and mental recovery; physical activity can be a treatment for postpartum depression. Physical activity is proven to improve emotional well-being and can overcome symptoms of postpartum anxiety.⁸ Postpartum depression can be overcome with light and moderate-intensity aerobic exercise; this can improve and be a treatment for mothers with mild to moderate depression symptoms.² Physical activity suitable for postpartum mothers needs to consider the needs of such conditions as mothers with a history of injury to ligaments, tendons, muscles, and bones.⁸

Good physical activity for postpartum women can be done 150 minutes per week or 25 minutes daily with moderate or heavy intensity.⁹ Physical activity is believed to have better effectiveness than following standard care to overcome postpartum depression.¹⁰ Exercise methods that are supposed to be effective in therapy for mothers with PPD are yoga and regular walking, both of which are believed to have a calming effect. Regular walking and yoga include low to moderate-intensity exercise, which can help mothers manage perceived disorders related to PPD.¹¹

This review is novel because it compares yoga and walking therapy directly for postpartum depression. It demonstrates the relative effectiveness of both methods and their suitability according to the severity of symptoms, yoga tends to be more effective for women with severe depression, while walking is more beneficial for mild to moderate depression. Additionally, the review highlights other advantages of walking, such as enhancing sleep quality and physical fitness and boosting coping skills and emotional regulation through yoga. Unlike most previous

reviews that examine each intervention separately, this one also considers other often overlooked benefits.

Despite these contributions, several research gaps still exist. Current evidence is limited by small sample sizes, brief intervention periods, and diverse study designs, which hinder the ability to generalise the findings. Few studies directly compare different types or intensities of yoga and walking, or assess their combined effects. Additionally, little is known about long-term sustainability, adherence factors, and the influence of social support on improving outcomes. Future well-powered randomised controlled trials with standardised intervention protocols must address these gaps and generate more substantial evidence for clinical and community practice. This study aims to compare which exercise method is more effective between yoga and regular walking methods in overcoming postpartum depression in postpartum mothers.

Methods

Protocol and Registration

This systematic review followed the PRISMA 2020 guidelines. The review protocol has been registered in the International Prospective Register of Systematic Reviews (PROSPERO) with registration number: CRD420251141136.

Search Strategy

A literature search was conducted in PubMed, Embase, Scopus, and MEDLINE as illustrated in **Figure 1**. Additional references were identified through manual searching. The following keywords and Boolean operators were applied: “postpartum depression” OR “postnatal depression” AND “yoga” OR “mind-body exercise” OR “pilates” OR “walking” OR “pram-walking” OR “stroller-walking”.

Inclusion Criteria

Population (P): Postpartum women (≤ 12 months after childbirth), regardless of maternal age or parity. Intervention (I): Exercise interventions involving yoga and/or walking (including pram-walking while pushing a baby stroller, stroller walking, or structured walking programs). Comparison (C): Control groups receiving standard care, social support, pharmacological treatment, or no intervention. Outcomes (O): Postpartum depression assessed using validated instruments (e.g., Edinburgh Postnatal Depression Scale (EPDS)),

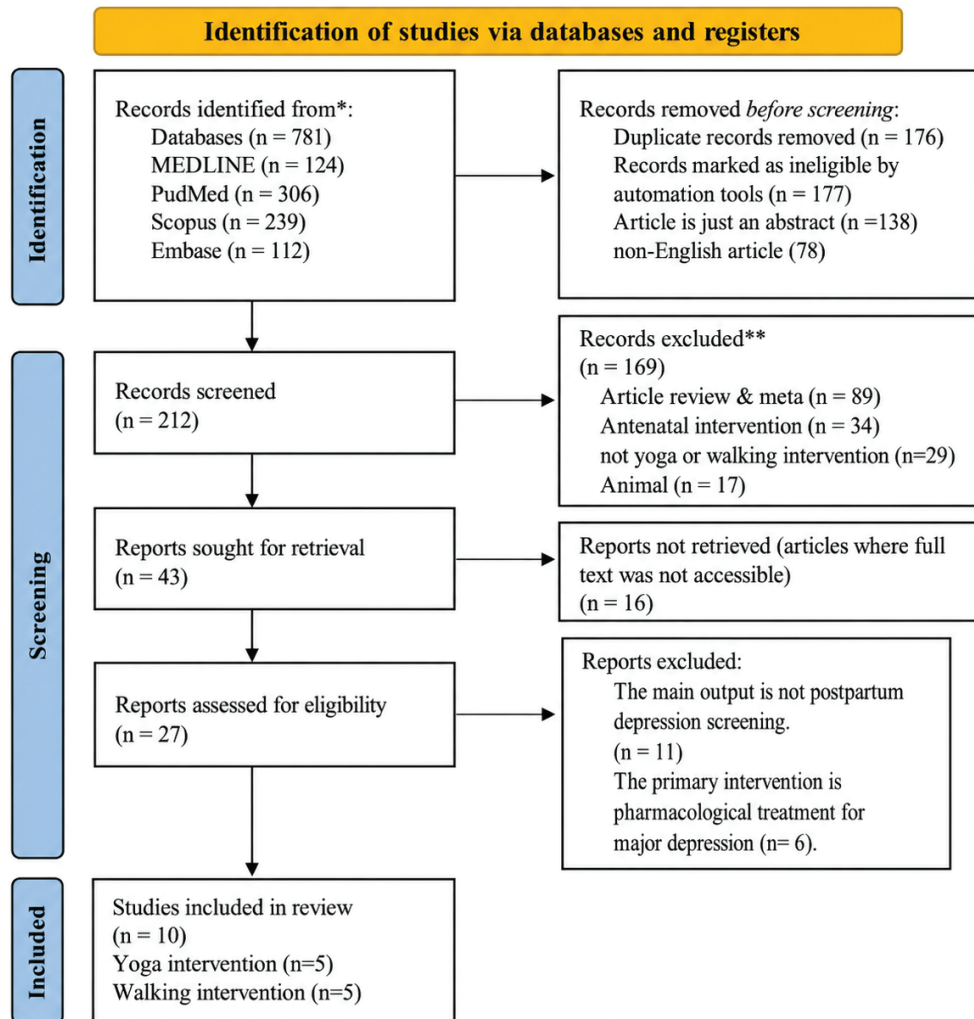


Figure 1. Prisma flowchart.

Hamilton Depression Rating Scale (HDRS), Center for Epidemiologic Studies Depression (CES-D), Perceived stress total score (PSS), Warwick-Edinburgh Mental Wellbeing Scale, and Zung Self-Rating Depression Scale (SDS)). Study design (S): Randomised controlled trials (RCTs) and quasi-experimental studies. Language and period: Published in English between 2000 and 2024.

Exclusion Criteria

Population excluding postpartum women (such as only antenatal women or non-maternal groups). Interventions that do not include yoga or walking (like aerobic exercises, strength training, or dance). Outcomes that do not measure postpartum depression or rely on non-validated tools. Non-original research such as reviews, meta-analyses, case reports, or protocols.

Selection Process

Two authors independently screened the titles and abstracts of all retrieved articles to assess eligibility. Full-texts were then evaluated for studies that met the inclusion criteria. Discrepancies between the two reviewers were resolved through discussion, and a third reviewer was consulted when consensus could not be reached.

Quality Appraisal

The methodological quality of the included studies was evaluated using the proper instruments based on research design. The Cochrane Risk of Bias (RoB 1.0) tool, which addresses topics such as random sequence generation, allocation concealment, participant and staff blinding, outcome assessment blinding, incomplete outcome data, selective reporting, and other potential biases, was used to assess randomized controlled trials

(RCTs). The Risk of Bias for Non-randomized Studies of Interventions (ROBINS-I) tool was employed for quasi-experimental research. This instrument evaluates bias across seven domains: confounding variables, selection of participants, classification of interventions, deviations from planned interventions, incomplete data, measurement of outcomes, and selection of reported results.

Data Extraction

The literature was analysed by benchmarking through inclusion and exclusion criteria. Then, data information was extracted from the literature. Extractions included the author's name, country of study, year of publication, population and sample size, interventions performed, depression scores using specific scales in the intervention and control groups, and other information related to the quality of the literature.

Results

A total of 476 postpartum women participated in all eligible trials, published between 2004 and 2022, with 223 involved in yoga treatments and 253 in walking interventions. The characteristics of these studies are summarized see in **Table 1**. These trials were conducted across various countries, including the US, UK, Ireland, Australia, Taiwan, Korea, Egypt, and others. The diverse postpartum populations are reflected in the varying average maternal ages, ranging from the early twenties to mid-forties. Five studies focused on yoga-based interventions, while another five explored walking-based interventions.

Risk of Bias Assessment

Overall, the included studies demonstrated varying levels of risk of bias. Although participant blinding was frequently unclear due to the nature of exercise-based interventions, most RCTs exhibited a low risk of bias in random sequence generation and selective reporting. Several studies, however, showed attrition bias related to participant dropout rates. In quasi-experimental studies, the absence of random group allocation contributed to a moderate risk of bias, particularly regarding participant selection and potential confounding factors. Nevertheless, outcome measurement and reporting were generally assessed as having a moderate risk of bias. A summary of the risk of bias assessment is presented in **Figure S1**.

Discussion

Effectiveness of Yoga Intervention in Managing PPD

Yoga, as a non-pharmacological therapeutic approach, has shown promising effectiveness in reducing symptoms of postpartum depression. Various forms of yoga, including traditional yoga, vinyasa yoga, Dru yoga, and baby yoga, were applied across the five analyzed studies, with differences in duration, intensity, and intervention settings. Overall, yoga interventions demonstrated positive effects on maternal psychological well-being, emotional regulation, and quality of life.

Short-term yoga interventions, such as the four-week program were able to reduce depressive symptoms and improve coping mechanisms among postpartum mothers.¹³ However, more stable and consistent improvements were observed in longer-duration interventions. Studies involving eight weeks of vinyasa yoga and three months of yoga combined with pilates demonstrated significant reductions in depressive symptoms, along with improvements in emotional and physical well-being.^{12,15} These findings suggest that longer yoga interventions may produce greater and more sustained effects on postpartum mood stability.

Beyond its psychological benefits, yoga also appears to play an important social and relational role. Group-based yoga interventions provided opportunities for social interaction among postpartum mothers, potentially reducing feelings of isolation during the postpartum period. Baby yoga did not show a statistically significant reduction in postpartum depression scores; however, mothers qualitatively reported feeling emotionally closer to their infants.¹⁴ Yoga therefore functioned not only as an intervention for emotional regulation, but also as a medium for strengthening mother-infant bonding and rebuilding maternal self-identity. Nevertheless, the effectiveness of baby yoga may be limited because its primary emphasis is on bonding rather than maternal emotional regulation. Additionally, shorter intervention duration, limited sample sizes, and lower adherence rates may have reduced its measurable impact compared with conventional yoga programs.¹⁴

Yoga interventions also demonstrated relatively high adherence and flexibility, particularly because many programs could be performed at home. home-based practice through the provision of self-exercise Digital Versatile Discs (DVDs), which helped mothers maintain

consistency with the intervention.¹³ This flexibility represents a major advantage of yoga compared with other physical interventions that require more structured schedules or specialized facilities. For mothers caring for newborns, the ability to practice independently at home may contribute substantially to intervention success. Although the role of self-motivation was not explicitly examined, intrinsic motivation likely influenced adherence, as home-based programs rely heavily on mothers' personal initiative to engage in regular practice.¹³

In addition to reducing depressive symptoms, yoga provided several broader health benefits. The improvements in emotional, physical, and social quality of life¹², while the reductions in body weight and fat mass.¹⁵ Furthermore, combining yoga with antidepressant therapy produced greater reductions in depression compared with antidepressant treatment alone.¹⁶ Physiologically, yoga is also associated with reductions in cortisol levels and increases in endorphin release, which may contribute to improvements in mood and overall emotional well-being.

Effectiveness of Exercise Walking in Managing PPD

Exercise walking, including pram-walking, stroller walking, and stride walking, represents a practical and inclusive physical intervention for postpartum mothers. The five analyzed studies applied walking-based programs to increase physical activity levels and evaluate their effects on maternal mental health and overall well-being. Overall, walking interventions demonstrated potential benefits for postpartum depression, although the effectiveness varied depending on the duration, intensity, structure, and level of participant adherence. The duration and intensity of walking interventions appeared to play an important role in determining outcomes. Moderate-intensity walking programs lasting 30–45 minutes per session over 12 weeks demonstrated significant reductions in EPDS scores.^{18,19}

In contrast, a shorter six-week intervention involving self-paced walking for 30 minutes per session did not produce significant improvements in depressive symptoms.¹⁷ These findings indicate that the effectiveness of walking interventions may depend not only on participation itself, but also on adequate intervention length, consistent frequency, and sufficient exercise intensity. Walking interventions conducted in groups also provided meaningful social and emotional benefits. Community-based activities such as stroller walking and pram walking

created opportunities for interaction and mutual support among postpartum mothers. The success of walking interventions was influenced not only by physical activity but also by the sense of belonging and shared experience developed during group participation.^{18,20}

Such supportive social environments may facilitate emotional recovery and reduce feelings of isolation commonly experienced during the postpartum period. Despite these benefits, several studies highlighted important challenges related to adherence and consistency. Several studies did not demonstrate significant reductions in EPDS scores, largely due to difficulties in maintaining regular participation.^{17,19,21} Common barriers included childcare responsibilities, unfavorable weather conditions, unsafe walking environments, fatigue, and limited motivation.

The participants achieved an average activity duration of only 61.6 minutes per week, which remained below the WHO recommendations for physical activity.²¹ These findings emphasize that adherence is a critical factor influencing the success of walking-based interventions for postpartum depression. In addition to psychological effects, walking interventions also provided broader physical health benefits. Moderate-paced brisk walking sessions of approximately 40 minutes, conducted twice weekly over 12 weeks, were associated with significant improvements in VO₂ max and reductions in body fat.¹⁸ Furthermore, stride walking interventions were reported to improve sleep quality among postpartum mothers. Although some walking programs did not immediately reduce depressive symptoms, improvements in sleep and physical fitness may contribute to long-term psychological well-being and support maternal mental health over time. The regular walking sessions over a 12-week period may offer gradual mental health benefits.²¹

Compared with walking interventions, yoga programs generally demonstrated more consistent and significant effects in reducing postpartum depression.^{12–16} Nevertheless, walking may be particularly suitable for mothers experiencing mild to moderate depressive symptoms, especially when delivered through community-based programs such as pram walking.¹⁸ Individualized walking programs, however, appeared less effective due to lower adherence rates.¹⁷ Walking offers greater flexibility and can be more easily integrated into daily routines, although environmental conditions and childcare responsibilities may limit consistency. In contrast, yoga

Table 1. Characteristics of the included literature.

Reference	Study Design	Primary Outcome	Secondary Outcome	Sample Size	Intervention	Pre-intervention Mean (SD)	Post-intervention Mean (SD)	p-value
[12]	RCT	HDRS	IDAS, SF-36 PA, NA, emotion-, problem-, and dysfunction- focused coping scores	n = 57 postpartum mothers (28 yoga, 29 control)	Sixteen 1-hour yoga sessions over 8 weeks	17.33 ± 5.10 (HDRS)	5.87 ± 6.03 (HDRS)	p < 0.05
[13]	RCT	PSS		n = 32 postpartum mothers (16 yoga, 16 control)	20-minute yoga once weekly for 4 weeks, plus 20-minute Dru yoga DVD practice at home twice weekly	25.25 ± 8.19 (PSS)	20.50 ± 6.82 (PSS)	p < 0.05
[14]	Quasi-experimental	WEMWBS	-	n = 66 postpartum mothers (33 intervention, 33 control)	8-week intervention conducted once weekly, consisting of 4 weeks of baby massage and 4 weeks of 1-hour baby yoga sessions	51.36 (WEMWBS)	57.64 (WEMWBS)	p > 0.05
[15]	Quasi-experimental (one-group)	CES-D	FSC	n = 23 postpartum women	Twelve 60-minute yoga sessions over 3 months, once weekly	12.48 ± 8.45 (CES-D)	10.13 ± 6.02 (CES- D)	p < 0.05
[16]	RCT	SDS	-	n = 40 postpartum women (20 yoga, 20 antidepressant group)	Yoga performed daily for 12 weeks (84 sessions total), 50 minutes/session	58.15 ± 4.09 (SDS)	48.45 ± 4.54 (SDS)	p < 0.05
[17]	Quasi-experimental	EPDS	PSQS, PFS	n = 104 postpartum women (50 walking, 54 control)	Stride walking for 20–30 minutes, three times weekly for 12 weeks	9.41 ± 4.4 (EPDS)	8.47 ± 4.5 (EPDS)	p > 0.05
[18]	RCT	EPDS	-	n = 19 postpartum women (9 pram walking, 10 social support)	Independent pram walking twice weekly for 12 weeks, 40 minutes/session	17.25 ± 4.00 (EPDS)	6.33 ± 3.67 (EPDS)	p < 0.05
[19]	RCT	EPDS	-	n = 38 postpartum mothers (20 pram walking, 18 control)	Self-administered pram walking for 30 minutes, five times weekly for 12 weeks, monitored by researchers	17.7 ± 5.2 (EPDS)	13.1 ± 5.2 (EPDS)	p < 0.05
[20]	RCT	EPDS	PSS, GSDS, LFS, SF-36	Phase I: n = 62 postpartum mothers; Phase II: n = 6 postpartum mothers (3 intervention, 3 control)	Stroller walking for 30 minutes, three times weekly for 6 weeks	15.3 ± 2.4 (EPDS)	10.1 ± 2.0 (EPDS)	p < 0.05
[21]	RCT	EPDS	SCID	n = 22 postpartum women (11 pram walking, 11 control)	Pram walking targeting 150 minutes/week for 12 weeks; average actual duration was 60 minutes/week	17.6 ± 4.0 (EPDS)	8.7 ± 6.9 (EPDS)	p > 0.05

Abbreviation: HDRS: The Hamilton Depression Rating Scale; PSS: Perceived stress total score; CES-D: Center for Epidemiologic Studies Depression Scale, Mandarin version; SDS: Zung Self-Rating Depression Scale; EPDS: Edinburgh Postnatal Depression Scale; IDAS: The Inventory of Depression and Anxiety Symptoms; WEMWBS: Warwick-Edinburgh Mental Wellbeing Scale; SF-36: The Medical Outcomes Study 36-Item Short-Form Health Survey; PA: Perceived stress total score; NA: Negative affect total score; FSC: Fatigue Symptoms Checklist; PSQS: Postpartum Sleep Quality Scale; PFS: Postpartum Fatigue Scale; GSDS: General Sleep Disturbance Scale; LFS: Lee Fatigue Scale; SCID: Structured Clinical Interview for DSM-IV

Table 2. Comparison of group-based vs individual exercise interventions in postpartum mothers.

Aspect	Group Exercise (Yoga/Walking)	Individual Exercise (Yoga/Walking)
Social Support	High : interaction with other mothers reduces isolation and increases motivation. ^{13, 14, 18}	Limited social interaction, increasing the risk of isolation and lack of emotional support. ^{15, 16}
Adherence	Higher adherence due to structured schedules and peer support. ^{17, 21}	Lower adherence with higher dropout rates caused by limited support and supervision. ^{12, 19}
Effectiveness on Depression	More consistent reduction in EPDS scores. ^{13, 18, 21}	Mixed findings, with several studies showing no significant differences. ^{15, 16, 19}
Barriers	Group activities such as pram walking depend on shared schedules, space availability, weather, and logistics. ¹⁸	More flexible and home-based, but motivation often declines without monitoring or support. ¹²
Additional Benefits	Baby yoga improves emotional support, mother–infant bonding, coping skills, and maternal confidence. ¹⁴	Personalized and flexible, suitable for mothers unable to attend group sessions. ¹⁶
Secondary Outcomes	<p>Broader improvements reported across multiple domains:</p> <ul style="list-style-type: none"> - Fatigue: inconsistent but sometimes improved.¹⁷ - Sleep quality: significant improvement reported in walking groups.¹⁷ - Anxiety and stress: significantly reduced in group yoga.¹³ - Quality of life: improved physical, social, and emotional well-being.^{12, 21} - Bonding: stronger mother–infant bonding in baby yoga groups.¹⁴ - Physical fitness and self-efficacy: improved VO₂ max and exercise confidence.¹⁸ 	<p>Benefits were generally less consistent due to lower adherence:</p> <ul style="list-style-type: none"> - Fatigue: no significant improvement.¹⁵ - Sleep quality: mixed findings.²⁰ - Anxiety and stress: minimal changes.¹⁶ - Quality of life: modest improvement, lower than group interventions.¹² - Bonding: rarely assessed. - Physical fitness and self-efficacy: limited improvement due to poor adherence.¹⁹

interventions typically require more structured sessions and sustained motivation, particularly for home-based practice without supervision.¹³ The differences between group-based and individual exercise interventions, including adherence, social support, flexibility, and psychological outcomes, are summarized in Table 2.

In group-based interventions such as walking groups, yoga classes, and baby yoga, the results are more consistent in providing positive effects due to peer support, motivation, and regularity because participants are reminded to attend. Meanwhile, individual interventions such as home DVDs yoga and self-walking are still beneficial, but often result in low compliance, reduced motivation, and results that are not always significant. When exercise is done in groups, as shown in several studies, social interaction offers support and lessens isolation, a major risk factor for PPD.^{37,38,39,40}

Mechanisms Behind Exercise Effectiveness on Postpartum Depression

The beneficial effects of exercise on postpartum depression are mediated through several psychological, neuroendocrine, and social mechanisms. Both yoga and walking interventions contribute to improvements in mood, emotional regulation, and stress reduction, although they may operate through partially distinct pathways.

Yoga promotes mindfulness by encouraging mothers to focus on breathing, body awareness, and movement. This mindful state helps individuals remain present and reduces excessive worry, thereby improving emotional regulation, which is particularly important for mothers experiencing postpartum depression.^{22–24} Through breathing exercises (pranayama) and physical postures (asanas), yoga also

regulates autonomic nervous system activity by reducing sympathetic nervous system activation and enhancing parasympathetic nervous system activity, commonly referred to as the “rest-and-digest” response.²⁵ These mechanisms suppress activation of the hypothalamic–pituitary–adrenal (HPA) axis and lower cortisol levels, which are frequently elevated in mothers with postpartum depression.²⁶

In addition, the rhythmic and mindful movements involved in yoga stimulate the release of endorphins, which improve mood and reduce pain perception. Yoga has also been associated with increased levels of serotonin, dopamine, and gamma-aminobutyric acid (GABA), neurotransmitters involved in mood stabilization and anxiety reduction.²⁷ Some evidence further suggests that relaxation-based yoga practices may enhance oxytocin release, strengthen maternal bonding, and improve melatonin regulation, thereby contributing to better sleep quality.^{28,29} Collectively, these neurobiological and psychological effects may explain why yoga often

demonstrates more consistent antidepressant effects compared with general aerobic exercise such as walking.^{5,30–34}

Walking interventions also exert antidepressant effects through physiological and psychosocial pathways. As a moderate aerobic activity, walking increases the release of endorphins, serotonin, and dopamine, all of which contribute to improved mood and emotional well-being. Regular walking has additionally been linked to increased brain-derived neurotrophic factor (BDNF) levels, which support hippocampal function and improve regulation of the HPA axis and cortisol responses. Walking may also help regulate circadian rhythms, increase melatonin production, and improve sleep quality, thereby reducing fatigue and psychological distress among postpartum mothers.^{35,36,31} Furthermore, group-based walking activities such as pram-walking provide opportunities for social interaction and peer support, reducing feelings of isolation and strengthening psychological resilience during the postpartum period.

This review has several limitations. First, many

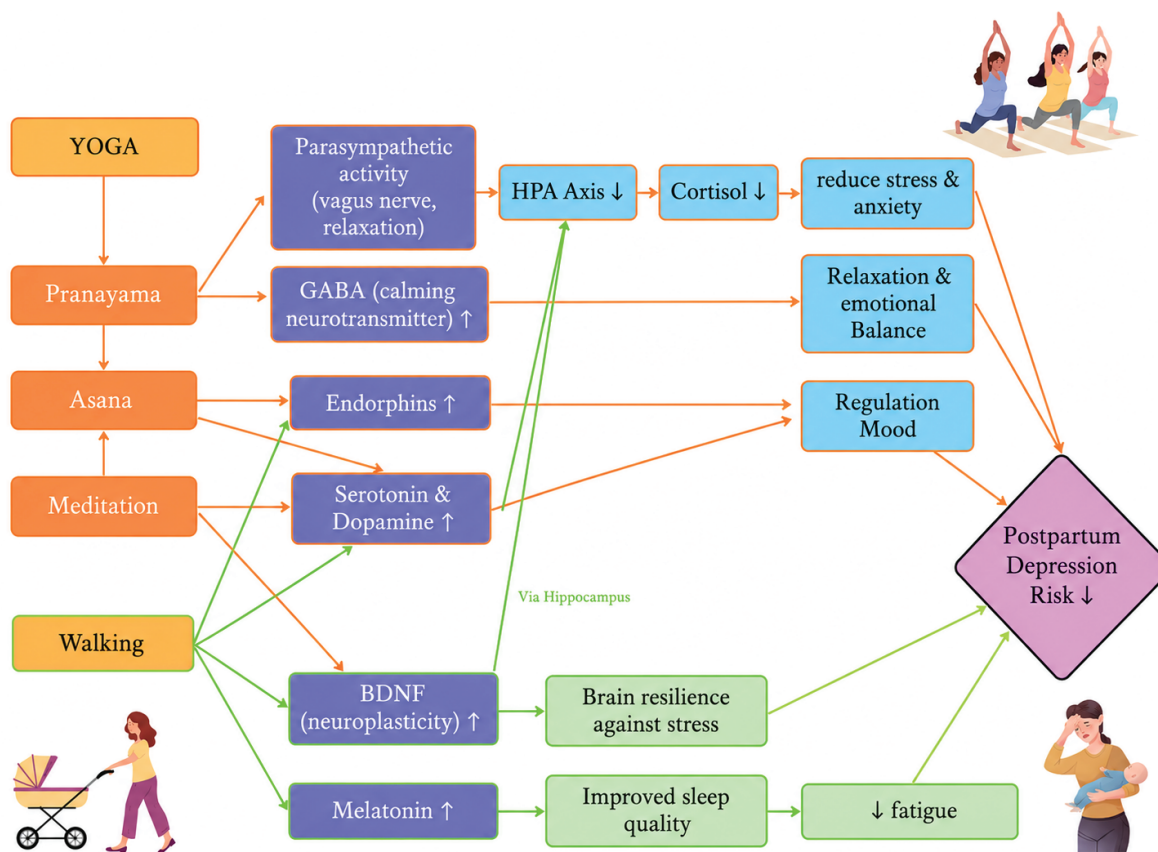


Figure 2. Mechanisms of yoga and walking in regulating postpartum depression.

included studies involved relatively small sample sizes and heterogeneous study designs, which may limit the generalizability of the findings. Variations in intervention duration, exercise intensity, outcome measures, and participant characteristics also made direct comparisons between studies challenging. In addition, it remains difficult to determine whether the observed psychological improvements were primarily attributable to the exercise interventions themselves or to the accompanying social support and group interaction. Finally, participation in exercise-based or group-based interventions may not be feasible for all postpartum mothers because of time limitations, childcare responsibilities, physical exhaustion, or cultural considerations.

Conclusion

Yoga is more effective overall for managing postpartum depression in postpartum mothers, especially in mothers with severe depression, due to its impact on stress regulation, coping strategies, and emotional balance. However, walking remains an important and relevant intervention, especially for mothers with mild depression symptoms and who need physical fitness. Currently, no study has directly compared yoga and walking in a head-to-head design, which points to a significant research gap. Future trials are needed to compare these two interventions to see if one is better or if combining them could offer the most benefits by blending yoga's psychological and emotional advantages with the physical and social gains from walking.

Authors' Contribution

ZAD: Conceptualization, methodology, literature search, data curation, formal analysis, writing original draft preparation, visualization, and editing. APA: Supervision, methodology, validation, writing review and editing, and project administration. All authors have read and approved the final version of the manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest associated with this publication.

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