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Exercise Interventions for Restless Legs Syndrome during Pregnancy: A Narrative Review

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ABSTRACT

Background: Restless leg syndrome (RLS) is a common sensorimotor disorder affecting 10–34% of pregnant women, particularly during the third trimester. Pharmacological treatment options during pregnancy are limited; therefore, safe non-pharmacological strategies such as exercise are important. Objective: To review current evidence on exercise-based interventions for managing restless leg syndrome during pregnancy. Methods: A narrative literature search was conducted in PubMed, Google Scholar, and Scopus databases from January 2014 to March 2025. Keywords used included "Restless Leg Syndrome," "Pregnancy," "Exercise Therapy," "Stretching," "Buerger Allen Exercise," "Progressive Muscle Relaxation," and "Non-pharmacological management." Randomized controlled trials, quasi-experimental studies, and systematic reviews focusing on exercise interventions in pregnant women with RLS were included. Non-English articles, case reports, and pharmacological-only studies were excluded. A total of 14 relevant articles were selected for qualitative synthesis. Results: Evidence suggests that stretching exercises, Buerger-Allen exercises, progressive muscle relaxation, and aerobic activity significantly reduce RLS severity and improve sleep quality in pregnant women. Exercise interventions were safe, feasible, and showed consistent improvements in symptom severity and maternal quality of life. Conclusion: Exercise-based interventions appear to be effective and safe for managing RLS during pregnancy. However, standardized exercise protocols and larger randomized trials are required to strengthen clinical recommendations.

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1. INTRODUCTION

Restless Leg Syndrome (RLS), also known as Willis–Ekbom disease, is named after Karl Axel Ekbom, who first described the "Restless leg condition" in 1945. He identified pregnancy as a common cause of RLS [1]. Restless leg syndrome is characterized by uncomfortable and distressing

sensations in the legs that occur predominantly during periods of rest or inactivity, particularly in the evening or at night. These sensations create an overwhelming urge to move the legs, as movement often provides temporary relief. Because the symptoms are typically worse at night, RLS severely interferes with sleep and overall quality of life [2].

Individuals with RLS often struggle to clearly describe their symptoms; however, the discomfort is most commonly experienced in the thighs, calves, and feet. The sensations are typically described as tingling, creeping, crawling, itching, pulling, crushing, burning, or as if something is moving inside the legs. Unlike pain, these sensations are vague and unusual in character. They are generally absent during periods of activity but tend to emerge or intensify during rest, relaxation, or attempts to sleep [2].

2. PREVALENCE

Restless Legs Syndrome (RLS) occurs more frequently during pregnancy than in the general population, with reported prevalence ranging from 11–34% compared to 2–10% in non-pregnant adults. Rates tend to be lower in Western populations and higher in Eastern Mediterranean countries, sometimes approaching 30%. Symptoms most often emerge in the third trimester, when severity is greatest, though many women perceive RLS as a benign pregnancy-related discomfort rather than a condition requiring clinical attention [3,4].

The prevalence of this syndrome in pregnancy varies with the gestational week, with the third trimester being the most common period.

3. PATHOPHYSIOLOGY OF RLS IN PREGNANCY

Possible mechanisms that contribute to the pathophysiology of RLS during pregnancy are divided into three categories: hormonal mechanisms, iron and folate metabolism, and other hypotheses [4].

Restless Leg Syndrome (RLS) during pregnancy is attributed to transient dopaminergic dysfunction influenced by elevated estrogen and progesterone in the third trimester. Excess estrogen reduces striatal dopamine responsiveness, while progesterone–dopamine interactions further impair neurotransmission. Concomitant iron and folate depletion reduces dopamine synthesis by limiting tyrosine hydroxylase cofactor availability [5].

Psychological stress, sleep disruption, venous distension, and mechanical root compression may exacerbate symptoms but lack consistent evidence. Rapid postpartum remission supports a pregnancy-specific neuroendocrine disturbance, with impaired dopaminergic signaling as the proximate mechanism [5].

The diagnosis of Restless Legs Syndrome is established according to the International Restless Legs Syndrome Study Group (IRLSSG) essential criteria. A subject is considered positive for RLS if all four criteria are fulfilled. Therefore, this narrative review aims to summarize current evidence on exercise interventions for restless leg syndrome during pregnancy and their effects on symptom severity and sleep quality.

4. RELATED WORK

Table 1. Existing Work Comparison

Author (Year)	Study design	Population /sample size	Intervention	Outcome measures	Key findings
Rubab et al. (2024)	Randomized clinical trial	Pregnant women, n=22 (case n=11, control n=11)	Stretching exercises + infra-red vs myofascial pain release + infra-red (twice weekly × 8 weeks)	Numeric Pain Rating Scale (NPRS); Pittsburgh Sleep Quality Index (PSQI)	Stretching group had greater pain reduction and improved sleep at 8 weeks compared with MPR group (15).
Shamekh et al. (2022)	Quasi-experimental, randomized assignment	Pregnant women, n=60 (two groups)	Daily leg stretching exercises for 1 week vs thermotherapy	RLS symptom severity; pain; sleep quality	Stretching produced larger and quicker reductions to mild RLS severity and improved sleep versus thermotherapy (statistically significant) (14).
Augustina et al. (2020)	Quasi-experimental	Pregnant women, n=30 (Group A n=15, Group B n=15)	TENS with stretching vs exercises and massage	Pain; functional performance	TENS plus stretching showed greater improvement in pain and functional performance than massage and exercises (19).
Akbaş & Yaman Sözbir (2023)	Randomized controlled trial	Pregnant women with RLS, n=67 (three groups: PMR, relaxation music, control)	Progressive muscle relaxation (PMR) daily; relaxation music program	International RLS Scale (IRLSS); Pittsburgh Sleep Quality Index (PSQI)	Both PMR and relaxation music improved IRLSS and PSQI; PMR produced the largest decrease in RLS severity (20).
Sapkota (2023)	Quasi-experimental	Pregnant women,	Buerger Allen exercise program	Modified Internatio	Experimental group showed

		n=60 (experimental n=30, control n=30)		nal RLS Scale (IRLSS)	statistically significant reduction in RLS severity versus control ($p < .005$) (16).
Kaplan et al. (2024)	Systematic review and meta-analysis	Studies of pregnant women with RLS (included trials as above)	Various nonpharmacological methods (stretching, relaxation, thermotherapy, exercises)	RLS severity; sleep quality (IRLSS, PSQI and equivalents)	Nonpharmacological interventions reduce RLS severity and improve sleep quality in pregnancy across included trials (21).
Jafarimanesh et al. (2020)	Randomized clinical trial	Pregnant women with RLS (sample reported in article)	Warm vs cold leg immersion (thermo-/cryotherapy)	RLS symptom measures	Thermo- and cryotherapy produced measurable effects on RLS symptoms during pregnancy (comparative effects reported in study) (22).

5. METHODS

A narrative literature search was conducted in PubMed, Google Scholar, and Scopus databases between January 2014 and March 2025. Keywords included “Restless Legs Syndrome,” “Pregnancy,” “Exercise Therapy,” “Stretching,” “Buerger Allen Exercise,” and “Progressive Muscle Relaxation.” Randomized controlled trials, quasi-experimental studies, and systematic reviews evaluating exercise interventions in pregnant women with RLS were included. Non-English articles, pharmacological-only studies, and case reports were excluded.

6. PROPOSED ETIOLOGY OF RESTLESS LEG SYNDROME

Restless legs syndrome (RLS) is frequently reported during pregnancy and is characterized by an urge to move the legs, usually associated with discomfort and sleep disturbance. The etiology of RLS in pregnancy is considered multifactorial. Alterations in iron metabolism have been widely discussed, as some studies report lower hemoglobin and mean corpuscular volume among affected pregnant women despite iron supplementation [6]. However, other studies show no consistent difference in ferritin or hemoglobin levels between women with and without RLS, indicating that iron deficiency alone may not fully explain the condition [7]. Genetic predisposition has also been suggested, with a considerable proportion of affected women reporting a family history of RLS.

Lifestyle such as smoking during pregnancy have been identified as possible contributors. RLS is most prevalent during the third trimester and often resolves after delivery, suggesting a transient pregnancy-related mechanism. Hormonal influences have been explored, but current evidence does not consistently support a direct association between estrogen levels and RLS occurrence in pregnancy [8].

Increased incidence of RLS with parity, gestational age, maternal age, and maternal adiposity has been reported, implying a cumulative or dose-dependent effect of pregnancy-related factors on RLS risk [8]. Additionally, pre-pregnancy RLS is associated with an increased risk of antenatal and postnatal depression, though the occurrence of symptoms in women without a previous history of restless legs syndrome prior to conception, RLS during pregnancy may not carry the same risk [9].

Overall, the etiology of RLS in pregnancy is likely due to a complex interaction of iron deficiency or altered iron metabolism, genetic predisposition, and pregnancy-related physiological changes, particularly during the third trimester. The transient nature of RLS in pregnancy and its resolution postpartum further supports the influence of pregnancy-specific factors rather than permanent neurological changes [7,9].

7. ROLE OF EXERCISE IN RESTLESS LEG SYNDROME DURING PREGNANCY:

Emerging evidence suggests that exercise, particularly aerobic activity, may serve as a valuable non-pharmacological strategy for alleviating symptoms of restless legs syndrome (RLS), including cases occurring during pregnancy. Although direct investigations in pregnant populations remain limited, findings from broader RLS cohorts and studies on sleep disturbances in pregnancy provide meaningful insight.

Clinical trials in populations with high RLS prevalence, such as individuals undergoing hemodialysis, demonstrate that aerobic and stretching exercises can significantly reduce symptom severity while enhancing sleep quality and functional outcomes [18]. Randomized controlled studies further indicate that combined aerobic and resistance training programs yield notable improvements compared with control groups [9]. Given that pregnancy-related RLS typically peaks in the third trimester and resolves postpartum, structured aerobic exercise offers a safe, non-pharmacological option for symptom relief during this period [10].

Exercise contributes to better sleep hygiene, a critical factor in maternal well-being. Interventions incorporating physical activity and education have been shown to improve sleep quality in pregnant women, thereby addressing a common comorbidity of RLS [11]. Systematic reviews of randomized trials reinforce the effectiveness of non-pharmacological approaches, including exercise, in reducing RLS severity and promoting sleep improvements [12].

Current evidence supports aerobic and stretching exercises as promising adjuncts in the management of pregnancy-related RLS. When combined with established measures such as iron supplementation, these interventions may enhance maternal outcomes without exposing mother or fetus to pharmacological risks [13].

Physical activity is recognized to improve circulation and enhance overall well-being, which may help alleviate RLS symptoms. Given that pregnancy-related RLS is linked to factors like iron deficiency and hormonal changes, exercise—including stretching and aerobic movement—may modulate these pathways by improving vascular function [15,16]. However,

while recent studies on stretching and Buerger Allen exercises show promise, evidence specifically for gestational RLS remains less robust than in general populations [16,17].

8. SUMMARY OF EXERCISE BASED INTERVENTION AND CLINICAL RECOMMENDATIONS FOR RESTLESS LEG SYNDROME

Table 2. Summary of Intervention Category

Intervention Category	Specific Modality	Clinical Efficacy	Recommended Protocol (Based on Evidence)
Stretching	Lower limb stretching (calf, hamstring, quadriceps)	High clinical efficacy, Shows quicker and more significant reduction in RLS severity than thermotherapy or massage.	Daily for 10–15 minutes, particularly in the evening before sleep.
Vascular exercise	Buerger-Allen Exercises	High clinical efficacy, Effectively improves peripheral circulation and reduces RLS symptoms in the 3rd trimester.	3 times daily (cycles of elevation, dangling, and rest).
Relaxation technique	Progressive Muscle Relaxation (PMR)	Moderate to High clinical efficacy, Significant improvement in both RLS severity and sleep quality (PSQI scores).	Daily session (20–30 mins) using guided muscle tension/release.
Aerobic activity	Low-impact walking or stationary cycling	Moderate clinical efficacy, Improves vascular function and dopamine regulation; best when combined with iron therapy.	30 minutes of moderate-intensity activity, 3–5 times per week.
Adjunct therapies	TENS or Myofascial Release (MPR)	Moderate clinical efficacy Useful for pain relief when combined with stretching, but less effective as stand alone therapy.	Twice weekly for 8 weeks (under professional supervision).

9. CONCLUSION

Exercise-based interventions, including stretching exercises, Buerger Allen exercises, progressive muscle relaxation, and aerobic activity, appear to be safe and effective strategies for reducing Restless Leg Syndrome severity and improving sleep quality in pregnant women. While current evidence is promising, further large-scale randomized controlled trials with standardized protocols are required to strengthen clinical guidelines for gestational RLS management.

CONFLICT OF INTEREST

The author declare that there is no conflict of interest regarding the publication of this paper

REFERENCES

[1] Guay, A., Houle, M., O'Shaughnessy, J., & Descarreaux, M. (2020). Current evidence on diagnostic criteria, relevant outcome measures, and efficacy of nonpharmacologic therapy in the management of restless legs syndrome (RLS): A scoping review. Journal of Manipulative and Physiological Therapeutics, 43(9), 930–941. https://doi.org/10.1016/j.jmpt.2020.05.004

[2] Mislu, E., & Jevier, F. (Eds.). (2023). Prevalence and factors associated with restless leg syndrome among pregnant women in middle-income countries: A systematic review and meta-analysis.

[3] Turan, H., Aşkın Turan, S., Butun, Z., & Kayapınar, M. (2023, September 8). The prevalence, severity, and predictive factors of restless legs syndrome in pregnancy. Cureus. https://doi.org/10.7759/cureus.44532

[4] Suzuki, K., Ohida, T., Sone, T., Takemura, S., Yokoyama, E., Miyake, T., et al. (2003, September 1). The prevalence of restless legs syndrome among pregnant women in Japan and the relationship between restless legs syndrome and sleep problems. Sleep, 26(6), 673–677.

[5] Srivanitchapoom, P. (2014, July 20). Restless leg syndrome and pregnancy: A review. Parkinsonism & Related Disorders, 20(Suppl 1), S27–S30.

[6] Hübner, A., Krafft, A., Gadient, S., Werth, E., Zimmermann, R., & Bassetti, C. L. (2013). Characteristics and determinants of restless legs syndrome in pregnancy. Neurology, 80(8), 738–742. https://doi.org/10.1212/wnl.0b013e318283baf3

[7] Meers, J. M., & Nowakowski, S. (2022). Sleep during pregnancy. Current Psychiatry Reports, 24(8), 353–357. https://doi.org/10.1007/s11920-022-01343-2

[8] Wesström, J., Skalkidou, A., Manconi, M., Fulda, S., & Sundström-Poromaa, I. (2013). Pre-pregnancy restless legs syndrome (Willis-Ekbom disease) is associated with perinatal depression. Journal of Clinical Sleep Medicine, 10(5), 527–533.

[9] Aukerman, M. M., Aukerman, D., Bayard, M., Tudiver, F., Thorp, L., & Bailey, B. (2006). Exercise and restless legs syndrome: A randomized controlled trial. Journal of the American Board of Family Medicine, 19(5), 487–493. https://doi.org/10.3122/jabfm.19.5.487

[10] Manconi, M., Govoni, V., De Vito, A., Economou, N. T., Cesnik, E., Casetta, I., et al. (2004). Restless legs syndrome and pregnancy. Neurology, 63(6), 1065–1069. https://doi.org/10.1212/01.wnl.0000138427.83574.a6

[11] Sönmez, A., & Aksoy Derya, Y. (2018). Effects of sleep hygiene training given to pregnant women with restless leg syndrome on their sleep quality. Sleep and Breathing, 22(2), 527–535. https://doi.org/10.1007/s11325-018-1619-5

[12] Harrison, E. G., Keating, J. L., & Morgan, P. E. (2019). Non-pharmacological interventions for restless legs syndrome: A systematic review of randomised controlled trials. Disability and Rehabilitation, 41(17), 2006–2014. https://doi.org/10.1080/09638288.2018.1453875

[13] Khan, A., Kumar, H., Rai, K. D., Saeed, A., Ishtiaq, J., Tanveer Alam, M., et al. (2025). Efficacy and safety of intravenous ferric carboxymaltose in the treatment of restless legs syndrome: A systematic review and meta-analysis. Frontiers in Neurology, 15, 1503342. https://doi.org/10.3389/fneur.2024.1503342

[14] Shamekh, A. H., Hassan, N. Z., Rashwan, Z. I., & Fathalla, N. F. (2022, September). Effect of stretching exercises versus thermotherapy on restless legs syndrome symptoms, pain, and quality of sleep among pregnant women. International Journal of Health Sciences (Qassim), 6(S6), 11204–11220. https://doi.org/10.53730/ijhs.v6ns6.13109

[15] Rubab, H. I., Ghani, H. M., Wafa, H. S., & Nasir, M. F. (2024, April). Effects of stretching exercises and myofascial pain release on pain and sleep quality in antenatal restless leg syndrome. Journal of Health and Rehabilitation Research, 4(2). https://doi.org/10.61919/jhrr.v4i2.807

[16] Sapkota, S. (2023, October). Effectiveness of Buerger Allen exercise among pregnant women with restless leg syndrome in a selected hospital Banke, Nepal. Dirosat, 1(4). https://doi.org/10.58355/dirosat.v1i4.42

[17] Guo, S., Huang, J., Jiang, H., Han, C., Li, J., Xu, X., et al. (2017, June 2). Restless legs syndrome: From pathophysiology to clinical diagnosis and management. Frontiers in Aging Neuroscience, 9, 171. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5454050/

[18] Altayb Ismail, M. A., Daffalla, I., Singh, T., Siddique, Q. R., Almadhoun, M. K. I. K., Irfan, R., et al. (2024). Efficacy of aerobic and stretching exercises in managing Willis-Ekbom disease (restless leg syndrome) among hemodialysis patients. Cureus, 16(10), e71470. https://doi.org/10.7759/cureus.71470

[19] Augustina, S. J., Kaviya, M., & Indrani, D. (2020). Effect of transcutaneous electrical nerve stimulation with stretching and exercises in restless leg syndrome among pregnant women. Obstetrics & Gynecology International Journal, 11(2). https://doi.org/10.15406/ogij.2020.11.00495

[20] Akbaş, P., & Yaman Sözbir, Ş. (2023, April). The effect of progressive muscle relaxation exercise on the intensity of symptoms and quality of sleep and quality of life in pregnant women with restless leg syndrome. Patient Education and Counseling, 113, 107768. https://doi.org/10.1016/j.pec.2023.107768

[21] Kaplan, Ö., Başer, M., & Karaçam, Z. (2024, June). Effect of non-pharmacological methods used for restless leg syndrome in pregnancy on the severity of the syndrome and sleep: A systematic review and meta-analysis. Alternative Therapies in Health and Medicine, 30(6), 32–38. PMID: 39038317

[22] Jafarimanesh, H., Vakilian, K., & Mobasseri, S. (2020, May). Thermo-therapy and cryotherapy to decrease the symptoms of restless leg syndrome during the pregnancy: A randomized clinical trial. Complementary Therapies in Medicine, 50, 102409. https://doi.org/10.1016/j.ctim.2020.102409

[23] Nanayakkara, B., Di Michiel, J., & Yee, B. J. (2023). Restless legs syndrome. Australian Journal of General Practice, 52(9), 615–621. https://doi.org/10.31128/ajgp-02-23-6722

[24] Mendes, A., & Silva, V. (2022). Possible etiologies of restless legs syndrome in pregnancy: A narrative review. Sleep Science, 15(4), 471–479. https://doi.org/10.5935/1984-0063.20220080

[25] Hayes, C., & Kriska, A. (2008). Role of physical activity in diabetes management and prevention. Journal of the American Dietetic Association, 108(4 Suppl 1), S19–S23. https://doi.org/10.1016/j.jada.2008.01.016