

Benefits of physical exercise on the quality of life of women during the gestational period

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Graphical Abstract

Highlights

- 38.3% to 74.3% of pregnant women are physically inactive.
- In pregnant women, light- and moderate-intensity activities are the most commonly performed.
- Diabetes, excess weight, and mental disorders are highly prevalent during pregnancy.
- Physical exercise during pregnancy confers benefits for the physical and mental health of women.



Prepared by the authors with the assistance of artificial intelligence (illustrative image).

Abstract

The objective of this study was to analyze the benefits of physical exercise on the quality of life of women during the gestational period. An integrative review was conducted using scientific articles from the Virtual Health Library (Biblioteca Virtual em Saúde – BVS), Scopus, and SciELO databases. Twenty articles published between 2020 and 2025 that presented exercise-based intervention programs for pregnant women were identified. It was found that the majority of interventions in pregnant women were conducted between the 5th and 21st week of gestation. Among the most frequently practiced physical exercises, light and moderate walking, as well as yoga, were the most common. The implementation of physical exercise programs during the gestational period yielded positive effects on nutritional status, glycemic levels, cardiovascular health, mental health, sleep quality, and the reduction of delivery complications. The study concluded that physical exercise provides important benefits for the physical and mental health and quality of life of women during the gestational period.

Keywords: Pregnancy. Quality of Life. Physical Exercise. Women's Health. Health Promotion.

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INTRODUCTION

During the gestational period, women undergo prenatal care, characterized by the performance of examinations and by measures taken to ensure the health of both mother and baby from the beginning to the end of pregnancy, encompassing clinical, psychosocial, preventive, and educational care. In this context, physical exercise represents one of the approaches that benefits maternal-fetal health¹.

During this period, various disorders may arise with negative repercussions on physical and mental health. Studies conducted in the United States indicate that, during the prenatal period, pregnant women may present rates of depression and anxiety ranging from 9% to 16%; in studies conducted in Brazil, these rates reach up to 27%².

Among the strategies for health promotion and the prevention of physical and mental illness, physical exercise has emerged as an efficient non-pharmacological approach to disease prevention, health maintenance, and improvement of endocrine function during the gestational period^{3,4,5}.

In 2015, the American College of Obstetricians and Gynecologists (ACOG) recommended that women without a healthy lifestyle at the onset of pregnancy should be encouraged to engage in exercise with a more gradual progression of intensity. For healthy pregnant women, the recommendation is at least 150 minutes per week of moderate-intensity aerobic exercise, distributed across a minimum of 3 days per week, in sessions of 30 to 60

minutes^{6,7,8,9,10}.

Despite the importance of physical activity during pregnancy, global studies indicate that physical inactivity during pregnancy is considerably high, reaching values between 38.3% and 74.3%^{11,12}. According to Meander *et al.*¹³, insufficient levels of physical activity in adults are associated with multifactorial mortality, cardiovascular diseases, and type 2 diabetes. During pregnancy, such inactivity has been associated with physical discomfort, nausea, cramps, and – above all – insecurity and lack of information regarding the benefits of physical exercise^{14,15}.

In view of the importance of health care during the gestational period, combined with the high prevalence of physical inactivity among pregnant women, this study aims to address the following question: what are the benefits of physical exercise on the quality of life of women during the gestational period?

The general objective is to analyze the benefits of physical exercise on the quality of life of women during the gestational period. To achieve this, the following specific objectives were pursued: 1) to identify the types of physical exercise and effort intensities used in health promotion and quality of life programs during the gestational period; and 2) to analyze other components used in intervention programs aimed at improving the health and quality of life of pregnant women.

METHODOLOGY

This study was developed through an integrative literature review. Initially, the guiding research question was formulated: what are the benefits of physical exercise on the quality of life of women during the gestational period? A systematized search was then conducted in the Virtual Health Library (Biblioteca Virtual em Saúde – BVS), SciELO, and Scopus databases, covering the five years preceding the research. The search was conducted from June 2025, using descriptors and/or keywords in Portuguese and English: “exercício físico” AND

“qualidade de vida” AND “gestantes”.

For article selection, the following inclusion criteria were established: a) articles published between 2020 and 2025; b) articles in Portuguese or English; c) articles related to exercise-based intervention programs for pregnant women. In addition, reports, monographs, theses, and dissertations were excluded.

Figure 1 presents the article search process, the results obtained, and the respective reasons for selection and exclusion.

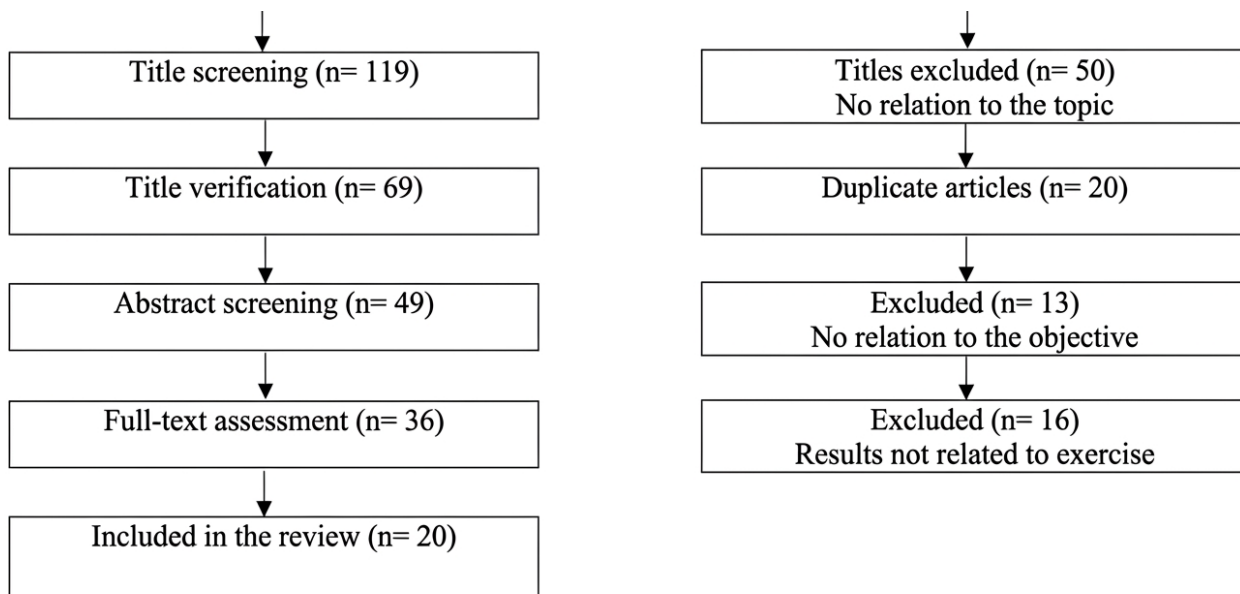


Figure 1 - Identification and selection of articles for the integrative review on the benefits of physical exercise on the quality of life of women during the gestational period.

RESULTS

Table 1 presents the characteristics of the studies selected for the review, indicating that the total sample corresponds to 54,545 pregnant women aged between 15 and 48 years who underwent interventions from the first trimester of pregnancy, with the majority implemented from the 5th to the 21st week of the gestational period.

Table 1 - Characteristics of the articles selected in the integrative review on the benefits of physical exercise on the quality of life of women during the gestational period.

Authors	Sample (n)	Age	Intervention period
Park <i>et al.</i> ⁵	1,689	18 years or older.	10 to 21 weeks.
Mahen; Wihongi; Connoly ⁹	507	28 to 48 years.	NR
Chen <i>et al.</i> ¹²	244	All ages.	24 to 37 weeks.
Chen <i>et al.</i> ¹¹	537	18 to 35 years.	5 to 13 weeks.
Chathurika <i>et al.</i> ¹⁶	19	20 to 30 years.	Throughout pregnancy.
Alfaqih <i>et al.</i> ²	406	24 to 35 years.	8 to 28 weeks.
Song <i>et al.</i> ¹⁰	268	NR	1 st and 2 nd trimester.
Yeşilyurt <i>et al.</i> ¹⁷	76	18 to 32 years.	NR
Gonçalves <i>et al.</i> ¹⁴	30	15 to 35 years.	After 24 weeks.
Laudańska-Krzemińska; Krzysztozek ¹⁵	353	Mean age 29 years.	1 st , 2 nd , and 3 rd trimesters.
Knudsen <i>et al.</i> ⁸	218	26 to 36 years.	After the 12 th week.
Sun <i>et al.</i> ¹⁸	37.920	NR	NR
Goławski; Wojtyła ⁷	9.170	26 to 35 years.	Throughout pregnancy.
Freitas <i>et al.</i> ¹⁹	1.279	21 to 30 years.	NR
Makaruk <i>et al.</i> ²⁰	30	All ages.	After the 12 th week.
Soto-Fernández <i>et al.</i> ²¹	99	20 to 40 years.	After the 1 st trimester.
Xie <i>et al.</i> ²²	1.649	20 to 32 years.	After the 8 th week.
Santos-Rocha <i>et al.</i> ²³	29	18 to 45 years.	20 to 25 weeks.
Shum, Ang, Shorey ²⁴	22	21 to 40 years.	NR

Note: NR: Not Reported; n: Number.

Table 2 presents the types of physical activities performed by pregnant women, the reasons for their engagement in physical activity, and the diseases arising during the gestational period:

Table 2 - Results of the physical activities performed by pregnant women.

Authors	Type of PA	Reasons for PA engagement	Related diseases
Park <i>et al.</i> ⁵	Yoga; Swimming; Stationary bike; Walking.	NR.	Obesity.
Mahen; Wihongi; Connolly ⁹	Walking; Running; Yoga; Cycling; Swimming; Aerobic dance; Resistance training; CrossFit.	Maternal-fetal health.	Gestational diabetes <i>mellitus</i> ; Gestational hypertensive disorders; Preeclampsia.
Chen <i>et al.</i> ¹²	Brisk walking; Stationary cycling; Aerobic exercises; Dance; Swimming.	Maternal-fetal well-being; Disease prevention.	Gestational diabetes <i>mellitus</i> (GDM); Pregnancy-related musculoskeletal pain; Sleep disorders.
Chen <i>et al.</i> ¹¹	Walking.	NR.	Gestational diabetes <i>mellitus</i> (GDM).
Chathurika <i>et al.</i> ¹⁶	Walking.	Maternal-fetal health.	Weight gain; Postpartum depression.
Alfaqih <i>et al.</i> ²	Light activities; Vigorous activities.	To reduce anxiety, depression, and stress levels.	Depression; Anxiety; Stress.
Song <i>et al.</i> ¹⁰	Light activities; Vigorous activities.	Maternal-fetal health.	Sleep quality, anxiety, and depression.
Yeşilyurt <i>et al.</i> ¹⁷	Diaphragmatic breathing.	Maternal well-being and oxygen saturation.	Maternal well-being, maternal blood pressure, heart rate, oxygen saturation, fetal heart rate, and uterine contractions in high-risk pregnancies.
Gonçalves <i>et al.</i> ¹⁴	Walking.	Maternal-fetal health.	Gestational diseases.
Laudańska-Krzemińska; Krzysztożek ¹⁵	Aerobic activities.	Well-being.	Risk of disease.
Knudsen <i>et al.</i> ⁸	Structured supervised exercises.	Quality of life of the pregnant woman.	Low back pain and/or pelvic girdle pain.
Sun <i>et al.</i> ¹⁸	Moderate-to-vigorous physical activity.	Maternal physical fitness and delivery outcomes.	NR
Goławski; Wojtyła ⁷	Moderate-to-vigorous physical activity.	Positive impact on pregnancy.	Gestational diabetes and gestational hypertension.
Freitas <i>et al.</i> ¹⁹	MET (number of minutes spent on each activity multiplied by its intensity).	Maternal-fetal health.	Depression, anxiety, and stress.
Makaruk <i>et al.</i> ²⁰	Pilates; Antithrombotic exercises; Pelvic floor exercises; Stretching.	Maternal-fetal health.	Psychological disorders.
Soto-Fernández <i>et al.</i> ²¹	Yoga.	Maternal-fetal health.	Depression, gestational diabetes, hypertension.
Xie <i>et al.</i> ²²	Walking, running, yoga, and tai chi.	Maternal-fetal health.	Gestational hypertension; Gestational obesity.
Santos-Rocha <i>et al.</i> ²³	Resistance training.	Maternal-fetal health.	Chronic gestational diseases.
Shum, Ang, Shorey ²⁴	NR.	Maternal-fetal health; Health promotion; Facilitation of the delivery process.	Cardiovascular diseases, diabetes <i>mellitus</i> , and cancer.

NR: Not Reported

Table 3 presents the results reported by the intervention programs included in the study.

Table 3 - Results of the intervention programs.

Authors	Results
Park <i>et al.</i> ⁵	The results suggest that telehealth-based lifestyle interventions may be effective in reducing excess gestational weight gain. The development of targeted interventions integrated with obstetric guidelines aimed at reducing excess gestational weight gain through telehealth platforms should be considered not only as a strategy for pandemic contexts, but also as a means of increasing prenatal support and access to services.
Mahen; Wihongi; Connolly ⁹	Walking and yoga were perceived as the most beneficial modalities for maternal and fetal health, with outcome expectations of 9.5 ± 2.1 and 8.8 ± 2.9 for maternal health and 9.0 ± 2.5 and 8.2 ± 3.0 for fetal health, respectively. Higher-intensity and resistance activities were viewed less favorably, particularly CrossFit® resistance training, with outcome expectations of 5.2 ± 3.4 for maternal health and 4.8 ± 3.3 for fetal health.

to be continued...

Authors	Results
Chen <i>et al.</i> ¹²	Physical activity counseling was associated with a lower incidence of gestational diabetes <i>mellitus</i> , reduced glucose levels, lower gestational weight gain, and improvements in sleep quality, quality of life, low back pain, and pelvic girdle pain, as well as improved maternal and neonatal health outcomes.
Chen <i>et al.</i> ¹¹	This study found that the prevalence of physical inactivity was high among pregnant women at high risk of gestational diabetes <i>mellitus</i> . The findings suggest that healthcare professionals should strive to enhance physical activity self-efficacy, knowledge, and social support among pregnant women at high risk of gestational diabetes <i>mellitus</i> , with a focus on improving physical activity, particularly self-efficacy in relation to physical activity.
Chathurika <i>et al.</i> ¹⁶	The majority of participants recognized the importance of exercise and demonstrated positive attitudes, while a minority held misconceptions. The need for support and guidance from healthcare professionals is highly anticipated by pregnant women for the practice of prenatal exercise.
Alfaqih <i>et al.</i> ²	The study revealed that more than half of the participants presented some symptoms of anxiety and depression, and more than one-third reported stress during pregnancy. A significant association was observed between total energy expenditure and stress levels ($p < 0.001$).
Song <i>et al.</i> ¹⁰	A physical activity level of ≥ 7.5 MET-h/week and good sleep quality in the first and second trimesters of pregnancy benefit mental health and significantly reduce the occurrence of adverse pregnancy outcomes.
Yeşilyurt <i>et al.</i> ¹⁷	The combination of diaphragmatic breathing exercises and a motor imagery-based physical activity program in women with high-risk pregnancies showed no adverse effects on the fetus, did not induce uterine contractions, and resulted in improvements in maternal well-being and oxygen saturation. Imagery-based physical activity may be used in high-risk pregnancies in which physical activity and exercise are not recommended.
Gonçalves <i>et al.</i> ¹⁴	Based on the study results, physical activity practiced by pregnant women demonstrates a positive impact on pregnancy outcomes. Every obstetrician-gynecologist should, in their daily practice, encourage pregnant women to engage in any form of physical activity, not only intentional exercise. Such an approach represents a health gain for all (mother and baby) involved in this stage of pregnancy.
Laudańska-Krzemińska; Krzysztozek ¹⁵	Healthcare professionals rarely educate and motivate women to be physically active during pregnancy. Medical counseling, as currently perceived by women, appears to be insufficient to help pregnant women comply with physical activity recommendations during the gestational period.
Knudsen <i>et al.</i> ⁸	Across all groups, women reported high exercise self-efficacy at the beginning of pregnancy and moderate self-efficacy during pregnancy and one year postpartum. No significant differences were found between groups regarding health-related quality of life, sick leave, or low back and/or pelvic girdle pain during pregnancy.
Sun <i>et al.</i> ¹⁸	For pregnant women themselves, individualized prescription of physical activity or exercise, tailored by appropriate specialists or trained clinicians, may be the most effective means of helping them comply with PA guidelines, all of which need to be supported by governmental policies.
Goławski; Wojtyła ⁷	Based on the study results, physical activity practiced by pregnant women demonstrates a positive impact on pregnancy outcomes. Physically active women gave birth naturally more frequently, their pregnancies lasted longer, and preterm births were less frequent.
Freitas <i>et al.</i> ¹⁹	The positive effect of maternal employment on physical activity practice during pregnancy likely derives from the fact that women who engage in any professional activity outside the home may place greater value on their health and recognize the importance of physical exercise for the baby's health, as well as for maintaining and improving their physical and emotional condition during pregnancy and in postpartum recovery.
Makaruk <i>et al.</i> ²⁰	The planned study explores and analyzes the factors that enabled participants to maintain regular levels of physical activity through participation in the specially developed exercise program for pregnant women, which may be vital for the future development and implementation of successful physical activity programs, and for supporting physical activity education and guidance for women during pregnancy.
Soto-Fernández <i>et al.</i> ²¹	The research reveals that regular physical activity is beneficial for women. Regarding depression, pregnant women without depression are considerably more physically active. Furthermore, having a favorable employment situation or a high educational level is directly associated with being more physically active during pregnancy. Additionally, the results show that the greatest energy expenditure and the highest volume of physical activity are performed by pregnant women at home.
Xie <i>et al.</i> ²²	Physical exercise is associated with a reduced risk of gestational hypertension in overweight and/or obese pregnant women. Physical exercise represents a convenient intervention in everyday life. Given that the prevalence of gestational hypertension is increasing, the effect of general physical exercise on this condition observed in this study is promising. However, more rigorously designed studies are needed to further investigate these associations.
Santos-Rocha <i>et al.</i> ²³	The results of this study present a suggested 12-week exercise program for pregnant women that may be useful for exercise and health professionals and researchers in the planning, promotion, and implementation of interventions and complex clinical trials, such as a prenatal exercise program.
Shum, Ang, Shorey ²⁴	This study highlights the lack of knowledge among women in Singapore regarding the nationally recommended guidelines for physical activity during pregnancy. A myriad of factors influenced women's participation in physical activity. Factors such as support systems, informational support, and the benefits of physical activity encouraged women to be more active.



DISCUSSION

Table 1 presented the profile of the studies and of pregnant women participating in the intervention programs. A higher prevalence of programs implemented between the 5th and 21st weeks of pregnancy was identified. According to the studies, physicians and health professionals should encourage their patients to engage in regular physical activity throughout the entire gestational period^{6,7,15,16,21}.

Table 2 indicates that the most frequently performed physical activity during the gestational period is light-to-moderate-intensity walking, along with yoga. These lower-intensity activities are preferred by pregnant women, as they feel safer and can engage in them more easily^{2,5,10,11,12,14,22}.

Nevertheless, Song *et al.*¹⁰ and Santos-Rocha *et al.*²³ highlight that resistance training, swimming, Pilates, antithrombotic exercises, pelvic floor exercises, and stretching are excellent options for the health of both mother and baby during the gestational period^{20,23}. Song *et al.*¹⁰ and Cheng *et al.*¹¹ also emphasize the importance of physical exercise on sleep quality in pregnant women, thereby preventing other related health conditions.

Still with regard to Table 2, studies indicate that excessive gestational weight gain significantly increases the risk of pregnancy-related diseases, demonstrating that regular physical exercise promotes desirable and beneficial weight gain for maternal-fetal health^{5,16,22}.

Hypertensive disorders and cardiovascular diseases are also directly associated with pregnancy, posing risks to both mother and baby. According to the studies, regular physical activity and gestational monitoring have important effects in reducing comorbidities, enabling a safe pregnancy course^{7,9,17,21,22,24}.

Gestational Diabetes Mellitus (GDM) was a condition mentioned by several authors^{6,7,9,11,12,21,24}. According to Chen *et al.*¹², GDM is increasingly prevalent, affecting approximately 21.1 million live births worldwide, with an incidence of 16.7%.

Table 3 presents the results of the health intervention programs during the gestational period. The studies indicated that intervention programs have important effects on nutritional status, including reduction in gestational weight gain and in hormones associated with weight gain^{5,22}. Global studies indicate that 30 to 50% of women during the gestational period gain weight above recommended levels, with an increased risk of conditions such as obesity, diabetes, and cardiovascular disorders^{5,13}.

Regarding the effects of physical exercise on gestational diseases, positive effects on GDM were identified¹². GDM is associated with negative outcomes for both women and their offspring, including hypertensive disorders, preterm birth, macrosomia, large for gestational age, post-gestational type 2 diabetes, childhood obesity, metabolic syndrome, and disordered glycemic regulation in adolescents¹². Global studies suggest that physical activity may reduce the likelihood of developing GDM in pregnant women. Furthermore, GDM represents a public health concern that poses short- and long-term threats to maternal and fetal morbidity¹¹.

Hypertensive disorders affect approximately 8% of pregnant women and represent leading causes of maternal and fetal morbidity. Additionally, excessive postpartum blood loss is another cause of maternal morbidity, with an increasing incidence of women diagnosed with postpartum hemorrhage¹³.

Studies have also demonstrated positive effects of physical activity on mental health during the gestational period, particularly regarding stress, anxiety, and depression levels^{2,10,21}. According to Song *et al.*¹⁰, the prevalence of prenatal depression ranges from 7% to 37.1%; such levels of depression are closely associated with adverse maternal and fetal health outcomes, as is prenatal anxiety, with a global prevalence of 15–20%. Furthermore, physical activity during pregnancy has a positive impact on prenatal anxiety and postpartum depression, as well as contributing to the general reduction of anxiety, depression, and stress⁸.

The study by Song *et al.*¹⁰ also reported positive effects of physical activity on sleep quality in pregnant women. Women's sleep is frequently disrupted during pregnancy; studies describe that nearly 80% of pregnant women suffer from sleep disturbances. Additionally, according to recent meta-analyses, insomnia, restless legs syndrome, and obstructive sleep apnea affect 38.2%, 20%, and 15% of pregnant women, respectively¹⁰.

Physical activity also yielded positive effects during labor. Studies identified that physically active women or those who participated in a physical activity program had lower rates of preterm births and fewer complications during pregnancy⁷. In 2022, the French National College of Gynecology and Obstetrics concluded that, in addition to maternal health benefits, physical activity during pregnancy has a positive effect on the child's neuromotor and cognitive development following birth⁹.

CONCLUSION

In summary, the evidence presented in this study demonstrated that physical exercise programs involving low-impact activities with light-to-moderate effort intensity – such as walking and yoga – improve various dimensions related to the physical and mental health of pregnant women, positively influencing quality of life and well-being. Other strategies, such as breathing techniques and informational sessions on physical activity practice,

also benefit the overall health of pregnant women.

We suggest that, to achieve optimal outcomes from physical exercise programs for the health and quality of life of pregnant women, a multiprofessional team comprising physicians, psychologists, physiotherapists, and physical education professionals should accompany and guide women throughout the entire gestational period.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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