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BENEFITS OF PHYSICAL ACTIVITY DURING PREGNANCY FOR A PHYSIOLOGICAL LABOR

BENEFÍCIOS DA PRÁTICA DE ATIVIDADE FÍSICA, DURANTE A GRAVIDEZ, PARA UM TRABALHO DE PARTO FISIOLÓGICO

BENEFICIOS DE LA ACTIVIDAD FÍSICA DURANTE EL EMBARAZO PARA UN PARTO FISIOLÓGICO

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Abstract

Introduction: Regular physical activity is essential for the health and well-being of pregnant women and is associated with a reduced risk of maternal-fetal complications. **Objective:** To analyze the benefits of physical activity during pregnancy and labor. **Methods:** An integrative literature review was carried out using platforms and databases such as PubMed, EBSCO (via CINAHL and Cochrane), Scielo and LILACS, followed by an analysis of the results. According to the PRISMA model, 12 articles were selected and subsequently analyzed. **Results:** Women who practice physical activity during pregnancy are less likely to need labor induction, have a shorter labor, with less pain or need for epidural analgesia, have higher rates of eutocic delivery, and lower rates of complications resulting from labor. No benefits for the fetus were observed. **Conclusion:** Regular physical activity has numerous benefits for pregnant women throughout their labor. Furthermore, physical activity promotes strengthening of the pelvic muscles, improves pain control and contributes to women's autonomy and confidence during childbirth. The role of the Nurse Specialist in Maternal and Obstetric Health Nursing, together with the pregnant woman and her family, is essential for promoting a healthier pregnancy with better obstetric outcomes.

Keywords: Benefits; Labor Physical Activity; Pregnancy.

Resumo

Introdução: A prática regular de atividade física é fundamental para o cuidado com a saúde e bem-estar da mulher grávida e está associada à diminuição do risco de complicações materno-fetais. **Objetivo:** Analisar os benefícios da prática de atividade física, durante a gravidez e no trabalho de parto. **Métodos:** Foi realizada uma revisão integrativa da literatura com pesquisa em plataformas e bases de dados como PubMed, EBSCO (via CINAHL e Cochrane), Scielo e LILACS, seguindo-se uma análise dos resultados. Segundo o modelo PRISMA, foram selecionados 12 artigos que, posteriormente, foram analisados. **Resultados:** Mulheres que praticam atividade física durante a gravidez, têm menor probabilidade de vir a precisar de indução do trabalho de parto, têm um trabalho de parto mais curto, com menos dor ou necessidade de analgesia epidural, têm maiores taxas de parto eutócico e menores taxas de complicações decorrentes do parto. Não foram verificados benefícios para o feto. **Conclusão:** A prática regular de atividade física tem inúmeros benefícios para a mulher grávida ao longo do seu trabalho de parto. Além disso, a atividade física promove o fortalecimento da musculatura pélvica, melhora o controlo da dor e contribui para a autonomia e confiança da mulher durante o parto. O papel do Enfermeiro Especialista em Enfermagem de Saúde Materna e Obstétrica, junto da grávida e da sua família, é essencial para a promoção de uma gravidez mais saudável e com melhores desfechos obstétricos.

Palavras-chave: Atividade Física; Benefícios; Gravidez; Trabalho de Parto.

Resumen

Introducción: La actividad física regular es esencial para la salud y el bienestar de las embarazadas y se asocia con un menor riesgo de complicaciones materno-fetales. **Objetivo:** Analizar los beneficios de la actividad física durante el embarazo y el parto. **Métodos:** Se realizó una revisión bibliográfica integradora utilizando plataformas y bases de datos como PubMed, EBSCO (a través de CINAHL y Cochrane), Scielo y LILACS, seguida de un análisis de los resultados. De acuerdo con el modelo PRISMA, 12 artículos fueron seleccionados y posteriormente analizados. **Resultados:** Las mujeres que practican actividad física durante el embarazo tienen menos probabilidades de necesitar inducción del parto, tienen un parto más corto, con menos dolor o necesidad de analgesia epidural, presentan mayores tasas de parto eutócico y menores tasas de complicaciones derivadas del parto. No se observaron beneficios para el feto. **Conclusión:** La actividad física regular tiene numerosos beneficios para las embarazadas durante el parto. Además, la actividad física promueve el fortalecimiento de la musculatura pélvica, mejora el control del dolor y contribuye a la autonomía y la confianza de las mujeres durante el parto. El rol de la Enfermera Especialista en Enfermería Materno-Obstétrica, junto con la embarazada y su familia, es esencial para promover un embarazo más saludable con mejores resultados obstétricos.

Descriptores: Actividad Física; Beneficios; Embarazo; Parto.

Introduction

Regular physical activity is an important part of health care and well-being[1]. During pregnancy, it is associated with a reduced risk of maternal and even neonatal complications[2]. At this stage of life, women tends to gain weight and there are changes at the cardiovascular, musculoskeletal and endocrine levels, which can lead to the development of pathologies such as gestational diabetes or deep vein thrombosis[3]. Thus, the World Health Organization (WHO)[4] recommends that all pregnant women without obstetric contraindications should practice moderate-intensity physical activity for at least 30 minutes a day, 5 to 7 times a week, as corroborated by the American College of Obstetricians and Gynecologists[5].

The practice of physical activity during pregnancy is currently associated with the duration of labor and is seen as a preventative measure for complications associated with pregnancy and childbirth[2]. Studies show that prolonging the first stage of labor is associated with complications such as compression of the fetal head in the birth canal, a reduced neonatal APGAR index or fetal death, and a prolonged second stage of labor is related to an increased occurrence of caesarean sections and an increased need for episiotomies[6]. In addition, regular physical activity, combined with pelvic floor muscle training, prepares you for labor, controlling the occurrence of disorders such as urinary incontinence, bowel incontinence, pelvic organ prolapse or pelvic floor pain[7].

Despite the recommendations and benefits associated with physical activity, according to the National Statistics Institute (NSI), just over a third of the portuguese population does it on a regular basis[8]. A sedentary lifestyle is a risk factor for adverse outcomes during pregnancy, making it important to make pregnant women aware of the benefits of physical activity[3]. As part of the competencies of a Maternal and Obstetric Health Nurse Specialist, they must take responsibility for women's health education[9]. Therefore, as a strategy to analyze these issues and understand the possible intervention of the a Maternal and Obstetric Health Nurse Specialist in this area, this review aims to analyze the benefits of physical activity during pregnancy and labor.

Methods

An integrative review is a rigorous search for the most up-to-date bibliography, whether theoretical or empirical, focused on answering a particular question about a health problem, with a view to reducing doubts about the subject in question[10]. Thus, as mentioned above, we set out to carry out an integrative literature review, the general objective of which is to analyze the benefits of practicing physical activity during pregnancy and labor.

Using the MeSH terms “Physical Activity”, “Pregnancy” and “Labor, Obstetric”, and based on a rigorous methodological process supported by the most up-to-date scientific evidence, a search was carried out on platforms and databases such as PubMed, EBSCO (via CINAHL and Cochrane), Scielo and LILACS, followed by an analysis of the results, taking into account the principles established for the preparation of literature reviews, by the Joanna Briggs Institute model[11].

In order to meet the objectives, set and based on the PIO strategy (Table 1), the following research question was structured: “What are the benefits of practicing physical activity during pregnancy and labor?”.

Table 1: PIO strategy for formulating the research question.

Acronym	Description	Question component
P	Population	Pregnant women
I	Intervention	Physical activity
O	Outcomes	Benefits during pregnancy and labor

After presenting the initial results, during the research, the inclusion criteria were articles that evaluated the benefits of practicing physical activity during pregnancy and labor, that had been published in the last 5 years, in portuguese, spanish or english, with full text and free access. Articles that did not fit the research question and articles whose titles were repeated were excluded.

Based on the inclusion and exclusion criteria determined, a result of 2 articles in EBSCO, 6 articles in LILACS, 43 articles in PubMed and 4 articles in Scielo was obtained, resulting in a total of 55 articles. Despite this total, only 12 articles were analyzed after the article selection process using the Rayyan study screening tool for literature reviews, carried out by two authors and, if necessary, with the intervention of the third author, according to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) model (Figure 1)[10].

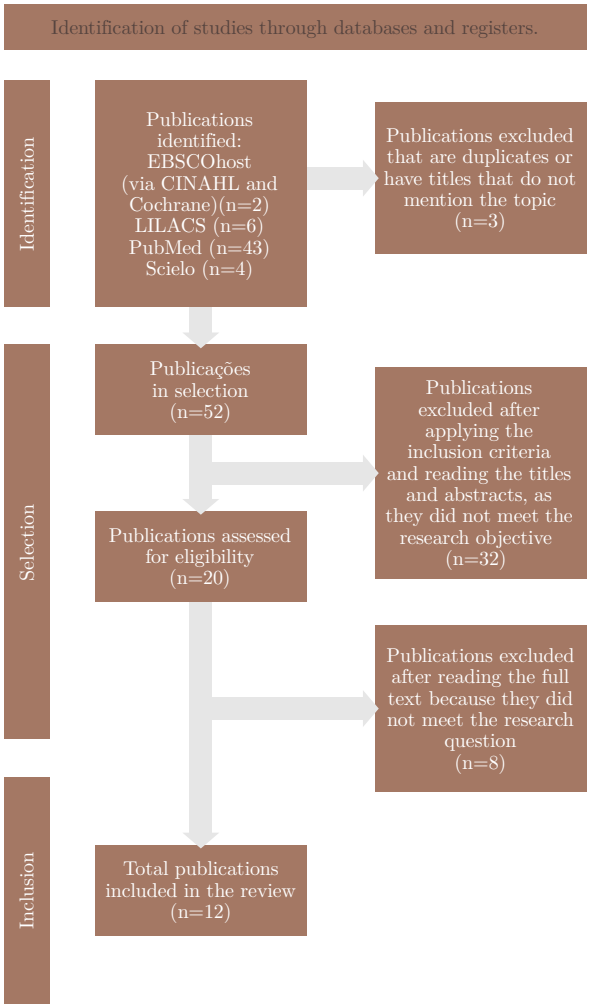

Figure 1: Flowchart according to the PRISMA model of the selected articles.

Results

Once the literature search had been carried out and the inclusion and exclusion criteria had been applied, the final articles were analyzed and the table of results presented (Table 2) was constructed, considering the title of the study and the authors, the type of study, the country and year, the objectives of the study, the sample and the conclusions. The level of evidence of the articles included in the review was assessed taking into account the JBI guidelines.

In conclusion, the aim is to answer the research question "What are the benefits of practicing physical activity during pregnancy and labor?" by discussing them.

Table 2: Results obtained by analyzing the articles.

Study title and authors	Type of study and level of evidence	Country/year	Objectives of the study	Sample	Conclusions
Terapia de balón para manejo del dolor y sus efectos en el parto. Martínez, E., E.S., Serrano, M., O., Barrios, N., E., C., Gordon, G., P., Cornejo, F., S., V., & García, Z., G.	Narrative Literature Review. Level of evidence 5.	El Salvador, 2022.	To describe the use of the Swiss ball as a non-pharmacological measure for pain control and its effects on the progress of labor.	Scientific articles published in the last five years.	Swiss ball therapy is an effective non-pharmacological measure for controlling pain and anxiety during labor. By stretching and relaxing the pelvic muscles, this therapy reduces labor time and helps correct fetal presentation, avoiding obstetric procedures such as caesarean section and episiotomy.
The effect of Pilates on pain during pregnancy and labor: a systematic review and meta-analysis. Yilmaz, T., Ozlem, T., Gunaydin, S., & Kaya, H., D	Systematic Literature Review. Level of evidence 1a.	Turkey, 2023.	To reveal the effect of Pilates on pain during pregnancy and childbirth.	Four articles were used, two of which analyzed pain during pregnancy and two pain during childbirth.	Pilates exercise during pregnancy was not effective in reducing pain during this period, but it was effective in reducing labor pain. It is important to increase the use of Pilates exercises during pregnancy and to inform and educate health professionals on the subject.
The impact of physical activity during pregnancy on labor and delivery. Watkins, V., Y., O´Donnell, C.M., Perez, M., Zhao, P., England, S., Carter, E., Kelly, J.,C., Frolova, A., & Raghuraman, N.	Secondary analysis of a prospective cohort study. Level of evidence 2a.	United States of America, 2021.	To test the hypothesis that higher levels of physical activity in different lifestyle domains during pregnancy are associated with a shorter duration of labor.	The study, carried out by the Department of Obstetrics and Gynecology at Duke University, involved 811 women with full-term pregnancies who were admitted for induction of labor or spontaneous delivery.	Women who are more physically active during pregnancy have a shorter duration of active labor.
The Association between Physical Exercise during Pregnancy and Maternal and Neonatal Health Outcomes: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Wang, Y., Wu, L., Wu, X., & Zhou, C.	Systematic Literature Review. Level of evidence 1a.	China, 2022.	To explore the effect of exercise during pregnancy on maternal and neonatal health outcomes.	This study included thirteen articles with a total of 3047 pregnant women with gestational ages over ten weeks.	The findings suggested that exercise during pregnancy increased the incidence of natural childbirth and was not associated with increased health risks or adverse birth outcomes for pregnant women.
Effect of prenatal aerobic exercises on maternal and neonatal outcomes: A systematic review and meta-analysis. Veisy, A., Charandabi, S.M.A., Hematzadeh,S., & Mirghafourvand, M.	Systematic Literature Review and Meta-analysis. Level of evidence 1a.	Iran, 2020.	To evaluate the effect of prenatal aerobic exercise on maternal and neonatal outcomes.	Sixteen articles were used.	Prenatal exercise can significantly increase the frequency of vaginal delivery and reduce the number of caesarean sections, while having no effect on other maternal and neonatal outcomes, such as the first, second and third stages of labor, gestational age at birth, Apgar score at the first and fifth minute, umbilical cord pH, neonatal weight, height and head circumference.
Influence of pelvic floor muscle training alone or as part of a general physical activity program during pregnancy on urinary incontinence, episiotomy and third- or fourth- degree perineal tear: Systematic review and meta-analysis of randomized clinical trials. Zhang, D., Bo, K., Montejo, R., Sánchez--Polán, M., Silva-José, C., Palacio, M., & Barakat, R.	Systematic Literature Review and Meta-analysis. Level of evidence 1a.	Sweden, 2023.	To examine the effectiveness of pelvic floor muscle training during pregnancy in preventing urinary incontinence, episiotomy and third or fourth degree perineal tears.	Thirty articles were analyzed, involving a total of 6691 pregnant women in 14 countries around the world.	The effect of pelvic floor muscle training, alone or included as part of a general exercise program, during pregnancy, as a preventive method for urinary incontinence and third and fourth degree perineal tears, but with no effect on the rate of episiotomy.
Is Physical Activity Good or Bad for the Female Pelvic Floor? A Narrative Review. Bø, K., & Nygaard, I. E.	Narrative Literature Review. Level of evidence 5.	United States of America, 2019.	Present two opposing but accepted hypotheses about the effect of exercise on the pelvic floor and discuss the evidence for each.	Forty scientific articles were analyzed.	The authors concluded that the two hypotheses are supported by scientific evidence, however, they identified the scarcity of available information.
Effect of aerobic water exercise during pregnancy on epidural use and pain: A multi-centre, randomised, controlled trial. Carrascosa, M. C., Navas, A., Artigues, C., Ortas, S., Solerc, E.P.A., Bennasar-Venye, M., & Leivac, A.	Multicenter randomized study. Level of evidence 1c.	Spain, 2021.	To analyze the efficacy and safety of moderate aerobic exercise in water by pregnant women in the subsequent use of epidural analgesia during labor, induction of labor, mode of delivery and perception of pain.	Pregnant women (between fourteen and twenty weeks of pregnancy) with a low risk of complications.	Aquatic aerobic exercise during pregnancy had no effect on the use of epidural analgesia during labor, while pain perception was lower after aquatic exercise compared to usual care in pregnancy.
The effect of pregnancy pilates-assisted childbirth preparation training on urinary incontinence and birth outcomes: A randomized-controlled study. Buran, G., & Avci, S. E.	Randomized controlled trial. Level of evidence 1c.	Turkey, 2024.	To examine the effect of Pilates-assisted childbirth preparation training in pregnancy on urinary incontinence during pregnancy, as well as in the postpartum period and on birth outcomes.	126 nulliparous pregnant women (between twenty and twenty-eight weeks).	Pilates-assisted childbirth preparation training reduced the severity of urinary incontinence during pregnancy and in the early postpartum period. It also contributed to a reduction in weight gain during pregnancy, an increase in the rate of vaginal delivery and a reduction in the duration of labor.
Impact of Physical Activity of Pregnant Women on Obstetric Outcomes. Golawsk, K., & Wojtyla, C.	Empirical study. Level of evidence 3.	Poland, 2022.	To determine the physical activity practiced by pregnant women in Poland and its impact on the occurrence of certain pregnancy outcomes, such as type of delivery, length of pregnancy and birth weight.	A total of 9170 women admitted to Polish hospitals between 2011 and 2017 were surveyed.	The study indicates that physical activity carried out by pregnant women has a positive impact on pregnancy outcomes.
Optimizing labor duration with pilates: evidence from a systematic review and meta--analysis of randomized controlled trials. Haseli, A., Eghdampour, F., Zarei, H., Karimian, Z., & Rasoal, D.	Systematic Literature Review and Meta-analysis. Level of evidence 1a.	Iran, 2024.	To evaluate the impact of Pilates exercises on the duration of labor.	This study included eleven articles with a total of 1239 pregnant women.	The main conclusions propose a potential role for Pilates in reducing the duration of labor. It is recommended that pregnant women practice Pilates or similar physical activities to facilitate a more efficient delivery.
The effectiveness of a Pilates exercise program during pregnancy on childbirth outcomes: a randomised controlled clinical trial. Ghandali, N. Y., Iravani, M., Habibi, A., & Cheraghian, B.	Randomized Study. Level of evidence 1c.	Iran, 2021.	To investigate the effectiveness of the Pilates exercise program during pregnancy on birth outcomes.	The study involved 110 primiparous women who were randomly divided into two groups: intervention and control.	Pilates exercises during pregnancy improved the labor process and increased maternal satisfaction with childbirth, without causing complications for mother and baby. However, studies with larger samples are recommended to prove the effectiveness and safety of this practice during labor.

Discussion

We present the discussion in response to the research question, and in this sense, the main benefits of practicing physical activity during pregnancy and labor:

Preparing for Childbirth

The use of non-pharmacological methods for pain relief has been shown to be an effective technique for a physiological labor, also providing greater autonomy to the woman[12]. However, the use of some techniques is more effective when started during pregnancy, and it has been described that exercise during this phase is beneficial for preparing for a physiological birth[13], proving to have a positive impact on both the mother and the baby[3]. Haseli and colleagues[14], even admit that regular physical activity, through exercises such as Pilates, has greater benefits if practiced for longer durations, more frequently and starting earlier. In addition, the authors explain that these exercises strengthen and relax the pelvic muscles and increase the pelvic diameter, thus improving the condition of the birth canal. Martinez *et al*[12] reinforce the idea that Swiss ball exercises can improve a woman's control and confidence over her body and promote correct posture.

Reduction of Medical Interventions

Some authors have concluded that pregnant women who practice physical activity during pregnancy are less likely to need labor induction when compared to sedentary women[2]. Although Ghandali *et al*[15], found no association between physical activity during pregnancy and the need for oxytocic infusion during labor, Watkins *et al*[2], admit that regular physical activity leads to an increase in serum oxytocin levels, leading to less need for exogenous oxytocin administration during labor.

Better Pain Control During Childbirth

Combined with physical activity, there is an increase in the flexibility of the trunk and pelvic floor muscles and adaptation of respiratory movements, and therefore better pain control during labor[13]. The authors reviewed are in agreement when they found a reduction in the need for epidural analgesia or its use in lower doses[12,13,15,18]. However, although they conclude this, Carrascosa *et al*[18] found that in both study groups, the rate of use of epidural analgesia was similar.

Reducing the Duration of Labor

Regarding the duration of labor, the articles analyzed show some disagreements on the subject. For Bø and Nygaard[16], physical activity during pregnancy leads to a strengthening of the pelvic muscles, shortening the first and second stages of labor. Buran and Avci[17] and Ghandali *et al*[15] also state that physical activity reduces the total duration of labor. In their study, Wang *et al*[1] found a reduction in the first stage of labor, while Haseli *et al*[14] and Watkins *et al*[2] found no change in the duration of the second stage of labor. However, authors such as Carrascosa *et al*[18] and Veisy *et al*[6] found no change in the duration of labor in the groups studied.

Better birth outcomes

The type of delivery was also assessed in the selected articles, showing that physical activity influenced the rates of eutocic and dystocic deliveries. For Buran and Avci[17] and Martinez *et al*[12], physical activity significantly increased the likelihood of eutocic delivery, while Golawski and Wojtyła[3] and Veisy *et al*[6] found a marked reduction in the rate of caesarean sections. On the other hand, Ghandali *et al*[15] and Carrascosa *et al*[18] found no relationship between physical activity and the type of delivery, although the latter only analyzed groups practicing exclusively aquatic aerobic exercise. In addition, the results point to lower rates of premature birth in pregnant women who practice physical activity[3,6].

Reduction of Complications Associated with Childbirth

Complications associated with labor, such as third and fourth degree perineal tears, long-term pelvic muscle damage and urinary incontinence, are also reduced with physical activity[17]. Yilmaz *et al*[13] concluded

that practicing physical activity through Pilates contributes to strengthening the pelvic floor muscles, as well as preventing and treating dysfunctions resulting from pregnancy. Although Zhang *et al*[7] corroborate the above, they found no change in the number of episiotomies performed, an aspect also mentioned by Carrascosa *et al*[18] and Ghandali *et al*[15]. Practicing light to moderate physical activity, such as walking, can reduce the likelihood of urinary incontinence in women, but Bø and Nygaard[16] stress the importance of controlling high-impact efforts and the need to increase women's knowledge of the pelvic floor muscles and appropriate training methods during pregnancy.

In summary, Golawsky and Wojtyła's[3] findings on whether physical activity can have an influence on fetal development were inconclusive, while Veisy *et al*[6] considerations on this subject point to few differences in the newborns of women who practiced physical activity compared to those who didn't, particularly with regard to some aspects such as the APGAR indices at the first and fifth minutes, umbilical cord pH, weight, height and head circumference.

Regular, appropriate and monitored physical activity during pregnancy is safe and has many proven benefits for the woman and, indirectly, for the baby. Although some of the evidence is contradictory, most of the studies analyzed point to positive effects on the birth process and maternal health. The infographic in Figure 2 summarizes the main benefits of physical activity during pregnancy and labor.

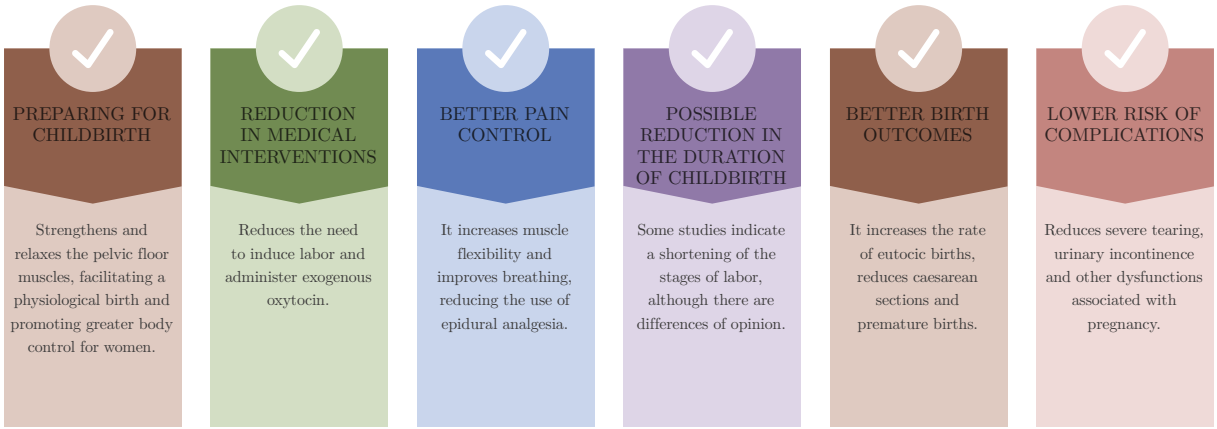

Figure 2: Infographic on the benefits of physical activity.

Conclusion

Considering the literature analyzed, and to answer the research question, it can be concluded that regular physical activity has numerous benefits for pregnant women throughout their labor. The main benefits include: a reduction in the duration of the stages of labor, a reduction in the need for pharmacological interventions, an increase in the rate of eutocic deliveries, a reduction in dystocia due to caesarean sections and a lower incidence of complications such as perineal tears and urinary incontinence. In addition, physical activity promotes the strengthening of the pelvic muscles, improves pain control and contributes to women's autonomy and confidence during childbirth. That said, the Maternal and Obstetric Health Nurse Specialist needs to intervene to educate and guide pregnant women and their significant others on the importance of regular physical activity and the most appropriate exercises for the stage of pregnancy, with a view to promoting a healthier pregnancy and better obstetric outcomes.

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AC; EC: Study coordination, study design, data collection, storage and analysis, review and discussion of results.
AC; EC: Data collection and analysis.
OZ; PB: Coordination of the study, review and discussion of the results.
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