INPLASY

Effects of combined physical exercise in healthy pregnant women during the gestation period

INPLASY2023120022
doi: 10.37766/inplasy2023.12.0022
Received: 05 December 2023
Published: 05 December 2023

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2023120022

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 December 2023 and was last updated on 05 December 2023.

INTRODUCTION

Review question / Objective The objective of this review was to determine the effects of combined physical exercise in healthy women during the gestation period.

Rationale Pregnancy is defined as a biological state of circumstantial changes related to the woman's pregnancy. This can even be considered a stage of life, appreciated as healthy with the absence of disease and following healthy guidelines. During pregnancy, it is recommended to perform 30 minutes or more of light to moderate exercise on most days or 150 minutes weekly. Regular physical activity during pregnancy improves or maintains physical fitness, helps control weight, reduces the risk of gestational diabetes in obese women, and improves psychological well-being. However, very few women do physical exercise during their period; this is due to misinformation, circumstances, available resources and the individual's environment. In fact, active pregnant women reduce or give up physical exercise during the first weeks of pregnancy and some throughout the entire period. Furthermore, despite the benefits on health and well-being, less than 15% of pregnant women follow physical exercise recommendations. Previous studies have investigated and compared the risks and benefits of physical exercise during pregnancy, finding benefits; however, more information was needed to determine risks . Studies have determined that, although the recommended exercise guidelines are global for the gestational stage, exercise must be dosed in type and intensity and must be adjusted to the mother's previous physical condition. There is information that different types of exercise would be beneficial for this stage, including resistance exercise, aerobic exercise and the combination of both. The combination of these exercises is called concurrent, which is doses to complement and improve physical abilities.
The relationship between exercise and pregnancy has multiple benefits for both the health of the

mother and the fetus. Some of them are reducing the risk of conditions during and after pregnancy, such as excessive gestational weight gain, gestational diabetes, preeclampsia, gestational hypertension, childbirth complications, premature birth, newborn complications, urinary incontinence, postpartum depression and lumbopelvic pain.
Despite its benefits, performing physical exercise during pregnancy has been associated with fear of possible risks. The professionals in charge of monitoring pregnancies (gynecologists/obstetricians) were investigated, reaching the conclusion that misinformation about the benefits of physical exercise was not their responsibility. Although the literature concludes that fear and ignorance in this regard are not the only variables involved in the low prevalence of exercise and pregnancy, they are one of the main barriers.

Condition being studied Pregnancy.

METHODS

Search strategy This systematic review is carried out based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. To search for scientific articles related to the research study presented, the Pubmed, ClinicalKey and Cochrane platforms were used, within data repositories such as Web of Science and Scopus. The search was carried out between March and May 2023, considering scientific articles in Spanish and English based on combined exercise interventions in healthy pregnant women. It should be noted that the search was carried out in English to expand the search and the number of articles that would be obtained as a result on each of the platforms.
The keywords used were: “Combined exercise”, “healthy pregnancy”, “Healthy pregnant woman/women”, “Concurrent exercise”, using “AND” as a Boolean operator and the search combinations. Initially 235 articles related to the topic were found, then duplicates within these articles were eliminated and 132 results were obtained. By title selection, those that were not related to the keywords were eliminated, where 10 investigations were obtained. Subsequently, a summary of each of the articles was discarded, where articles on combined exercise interventions in women without any health complications were taken into consideration, achieving a total of 7 articles. Finally, through full text selection, a total of 6 articles were obtained, leaving out articles with specific interventions for some pathology during pregnancy and postpartum interventions.

Participant or population Healthy pregnant women.

Intervention Combined physical exercise.

Comparator Not applicable.

Study designs to be included Randomized controlled trial, transversal study.

Eligibility criteria The inclusion criteria considered for this review were: scientific articles on healthy pregnant women, whose population was in the age range between 15 and 49 years. The exclusion criteria considered exercise interventions in pregnant women with pathologies and/or pregnancy complications; physical exercise interventions of a single type; interventions performed outside the gestation period.

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The keywords used were: “Combined exercise”, “healthy pregnancy”, “Healthy pregnant woman/women”, “Concurrent exercise”, using “AND” as a Boolean operator and the search combinations represented in Table 1. Initially 235 articles related to the topic were found, then duplicates within these articles were eliminated and 132 results were obtained. By title selection, those that were not related to the keywords were eliminated, where 10 investigations were obtained. Subsequently, a summary of each of the articles was discarded, where articles on combined exercise interventions in women without any health complications were taken into consideration, achieving a total of 7 articles. Finally, through full text selection, a total of 6 articles were obtained, leaving out articles with specific interventions for some pathology during pregnancy and postpartum interventions.

Main outcome(s) The main results show that pregnant women who performed physical activity presented changes in morphological components. Three of the six studies reported an improvement

in the mother's body composition, in reference to weight and BMI. However, the six studies presented differences in weight and BMI between the control group and the intervention group. In three of the six studies considered, favorable modifications were observed in some variables related to morphological components such as differences in the body composition of women and their lipid profile. One of the articles showed complete adherence to exercise, as well as greater enjoyment of life. In another study it was seen that women who completed the exercise program had a faster labor compared to the control group. There were significant differences in the perception of the state of pregnancy with respect to physical activity, and finally in one of the investigations it was seen that women with a higher educational level had stability in the exercise program due to their interest in its effects.

Additional outcome(s) One of the articles showed complete adherence to exercise, as well as greater enjoyment of life. In another study it was seen that women who completed the exercise program had a faster labor compared to the control group. There were significant differences in the perception of the state of pregnancy with respect to physical activity, and finally in one of the investigations it was seen that women with a higher educational level had stability in the exercise program due to their interest in itseffects.

Data management Between 2011 and 2022, 10 articles were related to physical exercise in healthy pregnant women and healthy pregnancy. However, according to the inclusion criteria, only 6 of the 10 articles were chosen based on the relevance of the topic to this research. The descriptive results of the articles selected for this research (n=6) are presented below. The following collection was used for data extraction: (1) Author and year of publication, (2) Participants, (3) Age, (4) study design, (5) Training protocol, (6) Variables, (7) Training frequency, (8) Duration of training session, (9) Duration of program, (10) Results and (11) Complementary interventions.

Quality assessment / Risk of bias analysis For the methodological analysis of selected data, the PEDro scale was used.

Strategy of data synthesis For the application of the inclusion and exclusion criteria, reading the title and abstract was considered with the purpose of applying the first inclusion criterion. The article was read, analyzing in detail the methodology and main results obtained in physical condition and health variables. Taking into account the exclusion criteria, 122 articles were eliminated, leaving 10 articles, which were read completely, finally selecting 6 of them for the present review.

Subgroup analysis All selected articles considered pregnant women in their sample without pathologies and/or complications in pregnancy, focused on the adult population (over 18 years of age). Other inclusion criteria were based on nulliparous women (two studies), women with a sedentary lifestyle (two studies), and inactive women (one article). Regarding the study design, five correspond to a randomized controlled trial (RCT) and one of them was a cross-sectional study. In most studies, the duration of the intervention was set between 24 to 90 weeks, with a frequency of between two and three times a week. The average duration of each session was 35 to 60 minutes. Intensity was stated in only two studies. It is observed that, in all of the interventions, the protocols include different types of exercise, mainly resistance, strength and endurance exercises, as well as flexibility, relaxation and stretching exercises. Some studies considered coordination, balance, and general physical conditioning exercises, in addition to free swimming and aquatic activities; one of them also included pelvic floor strengthening in its intervention. The components of physical condition related to health considered in most studies were based on the morphological component, and specifically on anthropometric measures such as age, height, BMI, weight. Some articles took into account gestational week, weight and BMI before pregnancy. Only two of the studies analyzed smoking habits and alcohol consumption. One of the studies considered work activity, time on foot and time doing housework, other studies considered previous abortion and previous premature birth in addition to singleton pregnancy and parity. Other studies were based on educational level and previous physical activity.

Sensitivity analysis Not applicable.

Language restriction English, Spanish.

Country(ies) involved Chile.

Keywords pregnancy, gestation, women, physical activity, combined exercise.

Contributions of each author

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