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DESCRIPTIVE LITERATURE REVIEW: AEROBIC PHYSICAL EXERCISES ON THE QUALITY OF LIFE AND PHYSICAL DISCOMFORT IN PREGNANT WOMEN

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Abstract: Pregnancy is a period characterized by intense morphological adaptations that have a great impact on health (Silva et al., 2017; Colla et al., 2017). Exercise in healthy pregnancy (for example: without contraindications) is considered beneficial and must be encouraged for all women (Shiri et al., 2018). The objective of the present study was to gather information about the effects of performing aerobic physical exercise programs on quality of life and physical discomfort in pregnant women. For this, a comprehensive descriptive review of the literature was carried out (August/2020), in the Pubmed and Pedro databases (Physiotherapy Evidence Database), with the following keywords in the English language: "exercise", "exercise therapy", "pregnancy", "pregnant women" and "quality of life". Of the 16 articles found, 2 were included in this review, and 14 of them were excluded because they did not address the topic of aerobic exercises during pregnancy or did not yet meet the inclusion and exclusion criteria. A table was then prepared with the two articles included, which contained information such as: name and year of the articles, number of volunteers, evaluated parameters, evaluation tool, protocol duration, training frequency, exercise intensity, study groups and conclusion. Based only on the studies included in this review, we can conclude that the aerobic exercise protocols performed were able to improve the quality of life and reduce musculoskeletal discomfort in pregnant women. Thus, exemplifying some of the benefits that exercise can provide to these women.

Keywords: exercises, therapeutic exercises, pregnancy, pregnant women and quality of life.

INTRODUCTION

Pregnancy is a period characterized by intense changes, in which morphological adaptations occur to create an ideal environment for the development of the fetus (Silva et al., 2016; Colla et al., 2017). These changes have short- and long-term impacts on health (Silva et al., 2016; Colla et al., 2017) and may include tissue edema, ligament laxity, postural adjustments, weight gain, displacement of the center of gravity, among others. that cause a predisposition to musculoskeletal disorders (Colla et al., 2017).

Exercising during pregnancy was once considered taboo. Women were advised to stand as little as possible; and a sedentary life was encouraged (Hanlon, 1999, p.3). Today, exercise during a healthy pregnancy (that is, without contraindications) is considered beneficial and must be encouraged for all women (Penny et al., 2008; Silva et al., 2016; Perales et al., 2016; Shiri et al., 2016; Shiri et al. al., 2018; DiBiase et al., 2019).

There are several types of exercise that can be performed, and among the numerous benefits that exercise can bring, we can mention: a greater sense of well-being with the performance of functional exercises with vigorous intensity (Penny et al., 2008; DiBiase et al., 2009), increased energy (Penny et al., 2008), improved strength and endurance (which helps with weight management) (Penny et al., 2008), improved sleep (Penny et al., 2008) al., 2008), a decrease in back pain (Penny et al., 2008; Shiri et al., 2018; DiBiase et al., 2019), in addition to the fact that its practice also prevents excessive weight gain (Gavard et al., 2019). al., 2008; Silva et al., 2016; DiBiase et al., 2019).

It is also believed to help prevent pre-eclampsia and premature birth (Gavard et al., 2008; Silva et al., 2016; DiBiase et al., 2009), as well as obesity in adulthood with the practice resistance and strength exercises, alternating

or combined with aerobic exercises (Silva et al., 2016). In addition, it can help in the prevention of gestational diabetes and blood glucose control (Penny et al., 2008; Silva et al., 2016; Shiri et al., 2018; DiBiase et al., 2019), limiting premature birth or with high weight for their gestational age (Gavard et al., 2008; Silva et al., 2016).

Specifically about aerobic exercises, it is known that it is safe during pregnancy, not being harmful to the mother or fetus (Wallace, et al., 1986), and studies show that its practice positively influences the pregnant woman's self-esteem, making a feeling of well-being and an improvement in the quality of life (Wallace, et al., 1986), in addition to promoting a decrease in depressive symptoms (Robledo-Colonia et al., 2012), an improvement in the quality of life and psychological health of the pregnant woman (Montoya et al., 2010), improved physical fitness, and reduced respiratory discomfort (Kramer Ms et al., 2006).

Even with all this information, less than 20% of healthy pregnant women follow the minimum exercise recommendations during pregnancy, that is, at least 30 min/day of moderate activity, with walking being the most common exercise adopted by active pregnant women (Perales et al., 2016).

Physical activity in pregnancy has minimal risks and has been shown to be beneficial for most women, although some modifications to exercise routines may be necessary because of anatomical, physiological, and fetal changes (Comitte Opinion_2015). Regarding the possible risks for the fetus during vigorous physical exercise during pregnancy, information is limited; since there are many variations in research designs, types of exercises and quarter of study (Penny et al., 2008).

In view of this low adherence to the practice of physical activities by pregnant women and focusing on the main physiological changes and discomforts brought about by pregnancy (Penny et al., 2008); based on scientific evidence about aerobic exercise programs for pregnant women, which have a direct impact on their quality of life, we prepared the following descriptive literature review, in order to expand access to knowledge about the benefits that the population of expectant mothers can gain from doing aerobic exercise during pregnancy.

GOAL

Gather information about the effects of carrying out aerobic physical exercise programs on the quality of life and physical discomfort in pregnant women.

METHODOLOGY

SEARCH STRATEGY

This is a literature update with articles selected in August 2020, from consultations with the databases: Medical Literature Analysis and Retrieval System Online (MedLine/Pubmed), Physiotherapy Evidence Database (PEDro), with available articles published until August from 2020.

The following keywords were used for the search: "exercise", "exercise therapy", "pregnancy", "pregnant women" and "quality of life". Which were defined based on the Medical Subject Headings (MeSH).

All references of selected studies were also revised to complement the research. All stages of the search were performed by only one reviewer (AGP), with the supervision of a senior reviewer (MPCRB).

INCLUSION AND EXCLUSION CRITERIA

Studies published in recent years, in English and Portuguese, with pregnant women (without any type of pathology or abnormal physiological conditions) were included. Randomized clinical trials were included.

Letters to the editor, abstracts, dissertations or academic theses, reviews, studies with animals, or with individuals with any type of pathology, studies that evaluated only the acute effect of exercise after a session of aerobic exercises or even training that combined aerobic exercises with other exercises, were excluded.

SELECTION OF STUDIES

For the selection of articles, the titles related to the theme mentioned above were initially screened. This selection was based on the titles that addressed: The impact or influence of the aerobic physical exercise program on the quality of life and musculoskeletal discomforts in pregnant women. At the end of the search, repeated titles were excluded, as this was carried out in two databases.

The next step was the detailed reading of the abstracts of the articles, in order to select those that addressed the influence of the aerobic physical exercise program on quality of life and musculoskeletal discomforts in the short and medium term and not the immediate post-exercise effect. Excluding abstracts that did not address the topic, the full texts were evaluated and those that did not fit the exclusion criteria were included as the final result of the search.

DATA ANALYSIS

The data were qualitatively analyzed and presented in the form of a table with the description of the following characteristics: Name and year of the articles, number of volunteers, evaluated parameters, evaluation tool, protocol duration, training frequency, exercise intensity, groups of the study and conclusion.

RESULTS

The search in the databases, using the selected descriptors, resulted in 763 articles, 680 in the PubMed database and 83 in PEDro. The identified articles were submitted to selection strategies for eligibility in the present study (Figure 1).

Two articles were selected, which were read in full and composed this update (Table 1). Of the two articles included, both used questionnaires as an assessment tool on quality of life through aerobic exercise during pregnancy.

DISCUSSION

Of the two articles included in this review, the most current one, described by Montoya et al. (Montoya et al., 2010), sought to analyze the quality of life in relation to the health of pregnant women who practiced mainly aerobic exercises, for 3 months, with a frequency of 3 times a week, and presented as a result that this exercise program improves quality of life of pregnant women in relation to health. This assessment was measured using the SF-12 PROTOCOL version 2, which is composed of 12 questions grouped into eight different health domains: physical functioning, limitation due to physical problems, body pain, general health perception, vitality, social function, role limitation due to emotional and mental health issues and each domain are further grouped into the "Physical Component Summary" (including function, physical function, bodily pain and general health) and the "Mental Component Summary" (including vitality, social function, emotional role and mental health). Test results were calculated according to the instructions provided in the questionnaire manual (Montoya et al., 2010).

The article published by Wallace et al. (Wallace et al., 1986), evaluated not only the quality of life during pregnancy, but also the pregnant woman's self-esteem and physical discomfort. The practice of aerobic exercises lasted 4 weeks, with a frequency of sessions twice a week. As a result, it was observed that aerobic exercises increase the pregnant woman's self-esteem and decrease the physical discomfort score, which as a consequence brings improvements to the quality of life during pregnancy for the woman. In this older study, these parameters were assessed using previously validated questionnaires, such as: Self-History Form to obtain gynecological data and exercise history; Pregnancy Discomfort Checklist, to measure the individual's perception of the frequency and intensity of symptoms of discomfort and the Rosenberg Self-Esteem Scale, used to measure global self-esteem, from 0 to 6, where 0 is considered low self-esteem and 6 self-esteem. (Wallace et al., 1986).

Other articles that address the subject of aerobic exercise during pregnancy, but which were not included in this review, also show several benefits brought by the practice of aerobic exercise during pregnancy. One of the examples is the article by Kramer Ms et al., 2006, where they showed as a result that the practice of aerobic exercises with a frequency of twice a week improves or maintains the physical fitness of women during pregnancy (Kramer Ms et al.,2006).

These benefits were also observed in the study by Perales et al., 2016, where the article shows that the practice of aerobic exercises during pregnancy, with a minimum frequency of 2 times a week, prevents excessive weight gain and helps with weight loss. of the same postpartum period, but when aerobic exercises were combined with resistance exercises, there was no significant effect (Perales et al., 2016). And in Robledo-Colonia et al., 2012, who found that performing aerobic exercises for 3 months, with a frequency of once a week resulted in a significant reduction in the symptoms of depression in pregnant women (Robledo-Colonia et al.,2012).

We were able to observe, in the face of this descriptive review of the literature, several benefits demonstrated in studies carried out with the population of pregnant women, such as; improvement in quality of life and musculoskeletal discomforts (explicit in the present review) (Wallace, et al., 1986; Montoya et al., 2010), in addition to improvement in physical fitness (Kramer Ms et al., 2006), impediment to excessive weight gain and help with postpartum weight loss (Perales et al., 2016) and also reduction of depression symptoms with the practice of aerobic exercises during pregnancy (Robledo-Colonia et al., 2012). A subject that was once questioned, today scientific evidence directs us to believe that this type of practice is indicated for this population.

Even so, there are few current studies on the impact of aerobic exercise on the quality of life and musculoskeletal discomforts in the population of pregnant women, demonstrated by the lack of data in the literature on the ideal prescription of the type of intensity and frequency that could optimize gains in quality of life and musculoskeletal discomfort in pregnant women. This information encourages us to develop new studies on the subject, in order to find data that can provide even more benefits for pregnant women.

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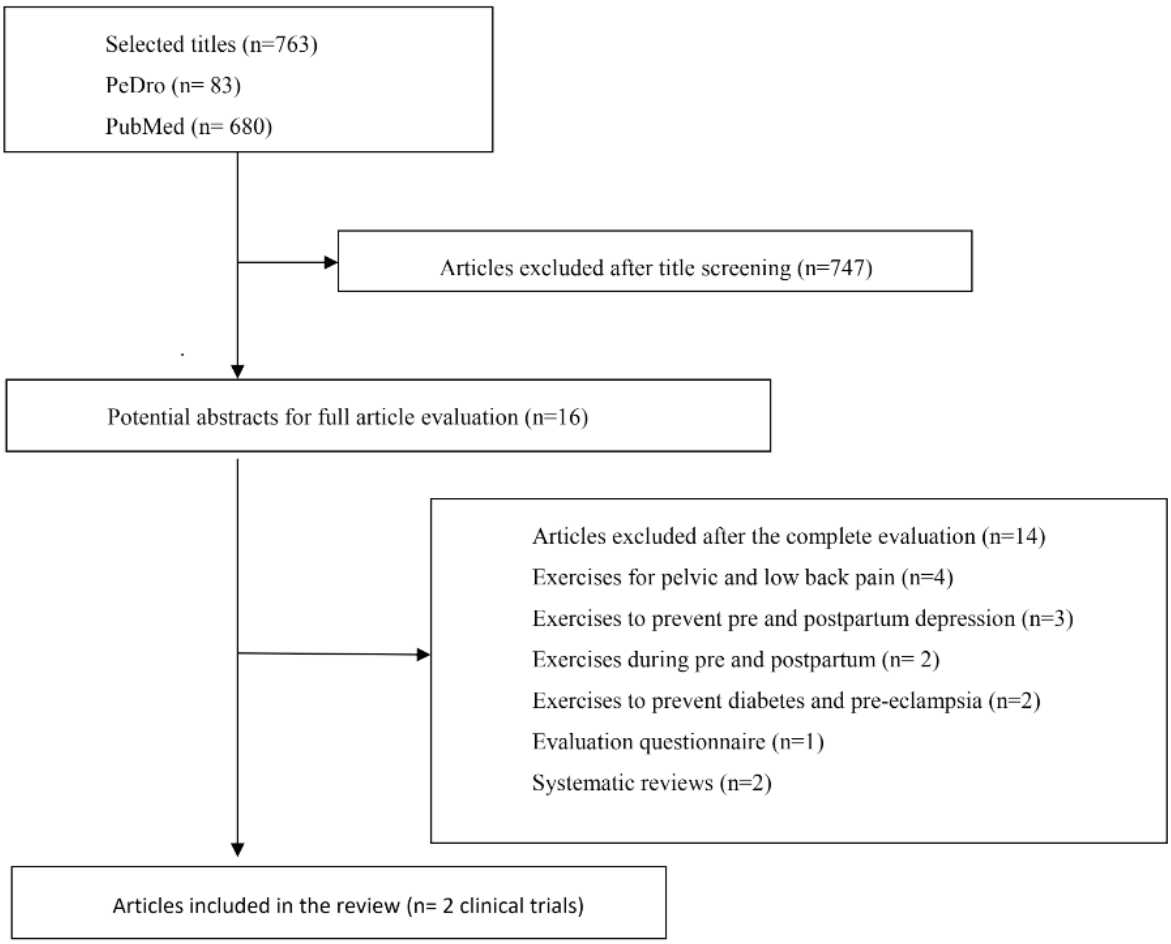

Figure 01: Flowchart of losses of the studies that composed this review

Article Name and Year	Number	**Study groups**	**Protocol duration**	**Training frequency**	**Protocol**	**Exercise intensity**	**Parameters**	**Assessment tool**	**Conclusion**
MONTOYA et al.,2010	64	3 times a week with 60 minutes each session	3 months	3 times a week with 60 minutes each session.	The sessions consisted of: Walk (10 min) Aerobic (10 min) Stretching (10 min) Relaxation (10 min) Supervised groups of 3 to 5 pregnant women.	Moderate to vigorous, not exceeding 75% of maximum heart rate.	Evaluate the improvement of quality of life in pregnant women through aerobic exercises.	Outcome study short-from health survey questionnaire (SF-12 version 2).	A supervised 3-month program of primarily aerobic exercise during pregnancy improves the pregnant woman's health-related quality of life.
WALLACE, et al., 1986.	53	Experimental group with 31 volunteers and control group with 22 volunteers	4 WEEKS	2 times a week lasting 20 minutes session.	Practicing exercises such as swimming, cycling, walking or light jogging.	Not addressed in the study.	Evaluate the improvement in self-esteem and discomfort during pregnancy with aerobic exercises.	Three ways of evaluating Self-History Form were used. Pregnancy Discomfort Checklist and Rosenberg Self-Esteem Scale.	The group of women who exercised had higher self-esteem and statistically significant lower scores of physical discomfort than the group of women who did not exercise.

Table 1: Description of the characteristics of the two articles included in this review.