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THE PRACTICE OF PHYSICAL ACTIVITY DURING PREGNANCY

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ABSTRACT

This study analyzes the evidence in the literature about physical activity practices practiced by pregnant women, as well as their frequency, benefits and adherence to exercise. An integrative review study in which 18 articles were identified that composed the research sample. The systematic search was performed in the VHL from the LILACS and MEDLINE databases, published in English and Portuguese, between the years of 2012 to 2017. The results indicate the benefits of physical activity during pregnancy, the limitations of the pregnant woman in relation to practice of exercises, and the recommendations of the types of activity that can be practiced, along with their frequency. It is understood that public health initiatives and health professionals need to adapt whenever necessary, promoting interventions based on population limitations.

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INTRODUCTION

Pregnancy is a cycle full of physical and similarly psychic changes, where the physical body adapts itself to the coming of the baby, and also the mind prepares itself for the woman to assume a new assignment, to be a mother. Practicing physical activity can make this cycle of change easier. But it was not always like this. A review of the literature on the practice of physical activities showed how physical activity was practiced by pregnant women in the 50's, 60's and 70's when only mild domestic activities were allowed. Currently, the practice of physical activity during pregnancy has been gaining support, through the studies carried out and the benefits reported by the pregnant women themselves (Moreira, 2017). During pregnancy, the woman has anatomical and physiological changes that should be considered when prescribing the exercise.

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The most distinct changes during pregnancy are the increased weight and a change in the point of gravity that results in progressive lordosis. It is normal for blood volume, heart rate, and output to be increased during pregnancy, while systemic vascular resistance decreases. These hemodynamic changes establish the circulatory reserve necessary to support the pregnant woman and the fetus at rest and during the exercise. There are also respiratory changes. The minute ventilation increases up to 50%, mainly as a result of increasing tidal volume (ACOG, 2002). Regular exercise during pregnancy is a recommended prenatal care strategy that provides short- and long-term benefits for the mother and child, (Alhusen, 2016) can maintain or improve physical fitness and outcomes during pregnancy, and does not increase the risk of adverse outcomes in this period (Gavard, 2008). Numerous studies indicate that the practice of physical activity benefits the pregnant woman at normal risk and also at high risk. Among the advantages is the lower incidence of gestational diabetes, hypertension and other complications related to pregnancy, such as cesarean section and preeclampsia; improves cardiovascular function,

decreases pelvic pain, back pain, reduces gestational weight gain (Claesson, 2014), increases muscle strength and lean muscle mass, improving sleep and the feeling of well-being. The fetus also benefits from decreased fetal heart rate at rest, improved placental viability, increased fluidity of the amniotic fluid, full term gestational age, and healthy birth weights (Mudd, 2013). Despite the benefits, ACOG (ACOG, 2017), (The American College of Obstetricians and Gynecologists) recommends that every pregnant woman should decide together with her obstetrician or other member of her health care team about the exercises that should be practiced during pregnancy. From such evidence, it is the objective of this study to identify what physical activities can be practiced during pregnancy, along with its frequency, benefits and restrictions. This study is justified by the need to know the types and frequency of physical activities that can be practiced during pregnancy, to assist health professionals in guiding pregnant women about the benefits, limitations and indications of the exercises.

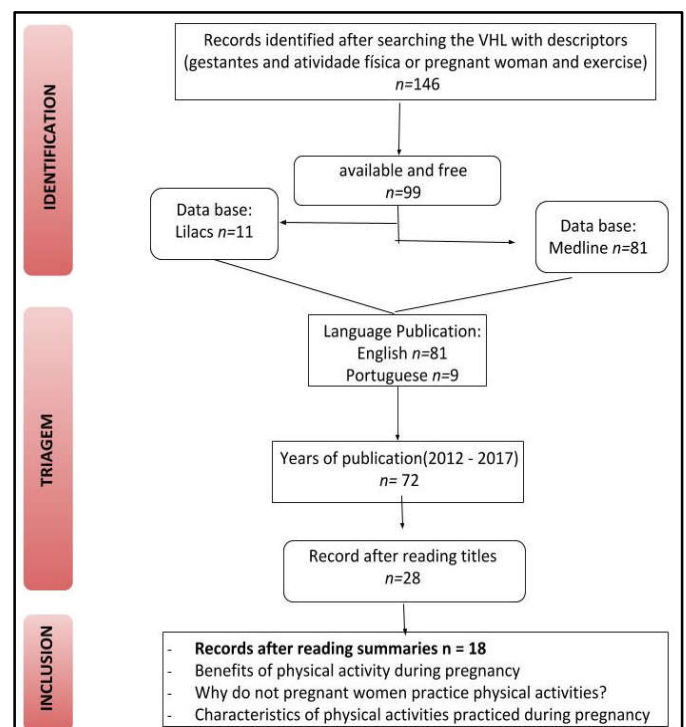
MATERIALS AND METHODS

The present study was carried out using the integrative literature review method. This methodology consists of a critical summary of already developed researches on the topic of interest, from which, in addition to providing the synthesis of knowledge, enables the incorporation of the applicability of results of significant studies in practice (Silveira, 2005). In this way, it can be said that the method is an Evidence Based Practice instrument, since it involves the definition of the clinical problem, the identification of the necessary information, the conduction of the search for studies in the literature and its critical evaluation, the identification of applicability of data from publications and determination of its use for a given group (Mendes, 2008). We decided to carry out an integrative review of the literature, allowing a systematic search, critical analysis and synthesis of available evidence on the physical activities that can be practiced during pregnancy. The process of preparing this integrative review was developed according to the six phases described by Mendes, (Mendes, 2008) as follows:

Choice of topic with establishment of the hypothesis or guiding question of the research: This phase of the research constitutes the choice of the subject to be approached, taking into account its social and scientific relevance. For our study, the choice of theme was based on the following evidence: (1) Women need to exercise during gestation to have quality of life. (2) Pregnant women can do physical activities within their limitations by quarter of pregnancy and health conditions. Thus, the guiding question chosen for the present review was "How does the practice of physical activity occur during pregnancy?". In our study, we sought to identify the benefits of physical activities for pregnant women, as well as which are the most indicated, their frequency and the reasons why they practice or stop practicing.

Sampling or Literature Search: The research was operationalized between November 10, 2017 and November 13, 2017, through a meeting of the material found in the Virtual Health Library (VHL) in a systematic way and the descriptors used were placed in Portuguese for the search in Latin Literature American and Caribbean in Health Sciences (Lilacs), and in English to include English-language articles in the search of the Medical Literature Analysis and Retrieve

System Online (Medline), as mentioned below: pregnant women and physical activity exercise), in the period between 01/01/2012 and 11/13/2017. This period of time was defined by the intention to integrate the most current literature of the last 5-6 years. The inclusion criteria were defined as follows: 1) Availability: articles in full online and free; 2) language: in Portuguese and English; 3) Year of publication: annual period from 2012 to 2017; 4) Database: Lilacs / Medline. All those studies that did not fit some of the inclusion criteria already cited were considered ineligible for this review. The titles and abstracts were read with consequent exclusion of those studies that did not refer to the object of study. Then the original articles were retrieved and read in full. From this reading, we identified the themes of the studies, which were later categorized. The articles that did not contemplate the object of study proposed were excluded. This selection process is described in the flowchart (Figure 1).



Source: author of the study

Figure 1. Flowchart of the methodological steps used in the integrative review

Data collection: At this stage, the data were extracted from the articles already selected in the previous phase. To that end, they were initially systematically recorded so that the most relevant information was actually extracted and the risk of errors was minimal. For the collection and recording of data obtained from eligible articles, we have developed an instrument adapted from Ursi (Bisson, 2015). This instrument, in addition to the identification of the article (title, authors and year of publication), carried out a survey of the methodological characteristics of the study (objective or research question, results, main conclusions) (if conclusions are justified on the basis of results) and the level of evidence. As shown in Table 1, 18 eligible articles were found in the time period investigated. Production was concentrated in the year 2015 (07 articles), predominantly carried out in the United States (USA), (08 articles). The quantitative methodological approach was predominantly (13 articles).

Critical review of included studies: The research data were analyzed, requiring an organized approach to evaluate the rigor

Table 1. Bibliometric indicators of the selected studies for the integrative review

Article (authors, title of article, year of publication)	Country	Method	Number of evidence
A1. ⁽¹³⁾ Bisson, M; Alm�eras, N; Dufresne, SS; Robitaille, J; Rh�eume, C; Bujold, E; et al. <i>A 12-Week Exercise Program for Pregnant Women with Obesity to Improve Physical Activity Levels: An Open Randomised Preliminary Study.</i> (2015)	Canada	Quantitative	2
A2. ⁽¹⁴⁾ Vamos, CA; Flory, S; Sun, H; DeBate, R; Bleck, J; Thompson, E; et al. <i>Do Physical Activity Patterns Across the Lifecourse Impact Birth Outcomes?</i> (2015)	EUA	Quantitative	2
A3. ⁽¹⁵⁾ Petrov FK; Fagevik OM; Glantz, A; Larsson, M. <i>Experiences of exercise during pregnancy among women who perform regular resistance training: a qualitative study.</i> (2014)	Sweden	Qualitative	4
A4. ⁽¹⁶⁾ Gaston, A; Prapavessis, H. <i>Tired, moody and pregnant? Exercise may be the answer.</i> Psychol Health; 2013. 28(12): 1353-69.	Canada	Quantitative	2
A5. ⁽¹⁷⁾ Deierlein, AL; Siega-Riz, AM; Evenson, KR. <i>Physical activity during pregnancy and risk of hyperglycemia.</i> (2012)	EUA	Quantitative	2
A6. ⁽¹⁸⁾ Alhusen, JL; Ayres, L; DePriest, K. <i>Effects of Maternal Mental Health on Engagement in Favorable Health Practices During Pregnancy.</i> (2016)	EUA	Quantitative	3
A7. ⁽¹⁹⁾ Newham, JJ; Allan, C; Leahy-Warren, P; Carrick-Sen, D; Alderdice, F. <i>Intentions Toward Physical Activity and Resting Behavior in Pregnant Women: Using the Theory of Planned Behavior Framework in a Cross-Sectional Study.</i> (2016)	Ireland	Quantitative	2
A8. ⁽²⁰⁾ Darroch, FE; Giles, AR. <i>Health/Service Providers' Perspectives on Barriers to Healthy Weight Gain and Physical Activity in Pregnant, Urban First Nations Women.</i> Qual Health Res; 2016. 26(1): 5-16.	Canada	Qualitative	4
A9. ⁽²¹⁾ Beckham, AJ; Urrutia, RP; Sahadeo, L; Corbie-Smith, G; Nicholson, W. <i>"We Know but We Don't Really Know": Diet, Physical Activity and Cardiovascular Disease Prevention Knowledge and Beliefs Among Underserved Pregnant Women.</i> (2015)	EUA	Qualitative	4
A10. ⁽²²⁾ Redmond, ML; Dong, F; Frazier, LM. <i>Does the extended parallel process model fear appeal theory explain fears and barriers to prenatal physical activity?</i> (2015)	EUA	Qualitative	4
A11. ⁽²³⁾ Melton, B; Marshall, E; Bland, H; Schmidt, M; Guion, WK. <i>American rural women's exercise self-efficacy and awareness of exercise benefits and safety during pregnancy.</i> (2013)	EUA	Quantitative	3
A12. ⁽²⁴⁾ Krans, EE; Chang, JC. <i>Low-income African American women's beliefs regarding exercise during pregnancy.</i> (2012)	EUA	Qualitative	4
A13. ⁽²⁵⁾ Lindqvist, M; Lindkvist, M; Eurenus, E; Persson, M; Ivarsson, A; Mogren, I. <i>Leisure time physical activity among pregnant women and its associations with maternal characteristics and pregnancy outcomes.</i> (2016)	Sweden	Quantitative	3
A14. ⁽²⁶⁾ Hayman, M; Short, C; Reaburn, P. <i>An investigation into the exercise behaviours of regionally based Australian pregnant women.</i> (2016)	Australia	Quantitative	3
A15. ⁽²⁷⁾ Kusaka, M; Matsuzaki, M; Shiraiishi, M; Haruna, M. <i>Immediate stress reduction effects of yoga during pregnancy: One group pre-post test.</i> (2016)	Japan	Quantitative	3
A16. ⁽²⁸⁾ Brearley, AL; Sherburn, M; Galea, MP; Clarke, SJ. <i>Pregnant women maintain body temperatures within safe limits during moderate-intensity aqua-aerobic classes conducted in pools heated up to 33 degrees Celsius: an observational study.</i> (2015)	Australia	Quantitative	3
A17. ⁽²⁹⁾ Jiang, Q; Wu, Z; Zhou, L; Dunlop, J; Chen, P. <i>Effects of yoga intervention during pregnancy: a review for current status.</i> (2015)	Japan	Quantitative	2
A18. ⁽³⁰⁾ Babbar, S; Chauhan, SP. <i>Exercise and yoga during pregnancy: a survey.</i> (2015)	EUA	Quantitative	3

Source: study data

Table 2. Thematic categories, study codes and percentage. S o Paulo / SP, Brazil, 2017

Category	Study code	Percentage
Benefits of physical activity during pregnancy	Articles A1, A2, A3, A4 and A5	27,78%
Why do not pregnant women do physical activity?	Articles A3, A6, A7, A8, A9, A10, A11 and A12	44,45%
Characteristics of physical activities practiced by pregnant women	Articles A13, A14, A15, A16, A17 and A18.	33,34%

of the research and the characteristics of each study. As a study based on Evidence-Based Practice, it is necessary to use a system of classification of evidence characterizing in a hierarchical way the articles, depending on its methodological approach. In our review, a hierarchy of evidences was used, according to the research design (Stetler, 1998). The levels of hierarchy were: level 1: evidence resulting from the meta-analysis of multiple controlled and randomized clinical studies; level 2: evidence obtained from individual studies with an experimental design; level 3: evidence from quasi-experimental studies; level 4: evidence from descriptive (non-experimental) or qualitative approach studies; level 5: evidence from case or experience reports and level 6: evidence based on expert opinions.

Discussion of the results and categorization of the studies:

For a better analysis of the data, a reduction, exposure and comparison is necessary; of the results obtained. For this purpose, the included studies were categorized by grouping articles with common themes. From the eligible articles, three categories were constructed, as described in Table 2.

RESULTS AND DISCUSSION

This is the 6th step of the review - the synthesis of knowledge. In the present study, articles were analyzed and discussed according to the categories in which they were grouped. The grouping of the articles was carried out in consideration of the relevant aspects of each one, but that in some way they were complementary. The different categories allowed the distinction between the scientific findings and the opinions and ideas, as well as the significant identification on what physical activities can be practiced by the pregnant women and their limitations. In the sequence will be described as if they give the physical activities in the gestation, subdivided into three thematic categories.

Benefits of physical activity during pregnancy: Articles from A1 to A5, which corresponds to 27.78%, showed that physical activity brings benefits during pregnancy, such as weight gain control; greater cardiorespiratory fitness; the pregnant women who practiced some type of exercise (walking, cycling, running or swimming) remained active until

the end of gestation; provides adequate weight gain for the baby and leads the pregnant woman to a full term delivery; reduced problems related to pregnancy, preventing diseases, increased self-confidence, quality of life and good form; and lower potential risk for hyperglycemia. Physical activity is highlighted in the benefits of physical activity for pregnant women with obesity (BMI ≥ 30 kg / m²). They have shown that moderate-intensity and muscular training, 1h, 3 times every two weeks, appears to be sufficient to maintain physical fitness and have a significant impact on weekly weight gain. They suggest that nutritional counseling, individual coaching, and the availability of exercise specialists for patients with specific needs may potentiate outcomes (Bisson, 2015). For women who were already physically active before pregnancy, physical activity benefits in the short and long term, have a higher rate of term births with the birth of babies of adequate weight for gestational age, this is due to the reduction of stress and the improvement of mental well-being provided by physical activity (Vamos, 2015). One study interviewed women pregnant women about their experiences with physical activity (regular training practice) during pregnancy and the results of this research were favorable. The pregnant women reported relief from various somatic problems that arose during pregnancy, including nausea, fatigue, headache, back pain and a positive impact on sleep.

The training was perceived as valuable for acquiring good posture, a sense of pleasure and a "will" to take care of the food, as well as being described as pleasant and necessary. They also reported that knowledge of the benefits of exercise, as well as disease prevention, family social support and health professionals, as well as staying in shape facilitated this process. Effect of the aerobic exercises in the mood of the pregnant women for a period of 04 weeks. And they realized that the practice of this physical activity significantly reduced fatigue and depressive and anxiety symptoms, including in relation to childbirth and the arrival of a new member in the family (especially for nulliparous ones), besides potentially increasing the concentration) Another study was carried out with women between 17 and 22 weeks of gestation, mostly white, upper middle class, obese before gestation, average age 29 and non-smokers. When exposed to moderate to high physical activity, they had a lower risk of developing hyperglycemia (glucose concentration ≥ 130 mg / dL) during gestation (Deierlein, 2012).

Why do not pregnant women practice physical activities?

Articles A3, A6 to A12, corresponding to 44.45%, bring the obstacles and limitations of physical activity to pregnant women, including the physical, psychological and social restrictions that hindered their performance; access to exercise sites, lack of understanding about exercise during pregnancy. Adolescent pregnant women who did not have social support and presented risk factors such as being smokers and not attending prenatal visits had greater depressive symptomatology and less involvement in favorable health practices (Alhusen, 2016). The Theory of Planned Behavior (TCP), which analyzes the trends of human behavior was applied to pregnant women in the third trimester and resulted in greater intention for rest and less intention to be physically active in relation to the pregnant women of the first and second semester (Newham, 2016). Pregnant women did not engage in physical activity during pregnancy for fear of endangering the baby because they did not know about safe practice (Redmond,

2015). The lack of knowledge about the benefits and healthy practices during gestation, as well as aggravating factors of overweight, gestational hypertensive syndrome (SHEG), and gestational diabetes mellitus (GDM) were factors that limited the practice of exercise by pregnant women. In addition to lack of information, poverty was aggravated along with a lack of healthy food, making physical activities unfeasible (Darroch, 2016; Beckham, 2015 and Redmond, 2015). Only encouraging women to eat healthy foods and to be physically active during pregnancy is ineffective if the necessary resources and support and the necessary support for it are not available (Darroch, 2016).

Characteristics of physical activities practiced during pregnancy: Articles A13 to A18, corresponding to 33.34%, together with the recommendations of the American College of Obstetricians and Gynecologists (ACOG) present the characteristics (type of exercise, frequency, intensity) of physical activities practiced by pregnant women. Revised in 2017, the ACOG recommendations for pregnant women at normal risk are to encourage healthy exercise practices, with the authorization of their obstetricians, and have a moderate-intensity exercise program lasting at least 20-30 minutes per day, being adjusted as clinically indicated. Among the physical exercises that are safe and can be practiced during gestation are: walking; water aerobics; stationary cycling; low impact aerobics; running, trotting and strength training (when authorized by the obstetrician accompanying the pregnant woman); yoga and pilates as long as they avoid positions that cause hypotension (ACOG, 2017). ACOG also mentions sports and activities that should be avoided during pregnancy: exercises that are risky to fall (tennis, skiing, surfing, diving, riding, parachuting, street cycling, gymnastics); and contact sports (soccer, boxing, basketball) (ACOG, 2017). In 2008, the US Department of Health and Human Services issued physical activity guidelines for Americans. For healthy pregnant and postpartum women, the guidelines recommend at least 150 minutes per week of aerobic activity of moderate intensity (ie equivalent to a brisk walk). This activity should be spread throughout the week and adjusted as clinically indicated. The guidelines recommend that pregnant women who routinely engage in aerobic activity of vigorous intensity (that is, race equivalent) or who are highly active may continue physical activity during pregnancy and the postpartum period as long as they remain healthy and discuss with your health care provider how and when the activity should be adjusted over time (ACOG, 2017).

Some of the characteristics of pregnant women who already practiced physical activity before becoming pregnant were: they continued to practice physical activity as recommended by ACOG, were not overweight or developed pregnancy-related diseases. The authors recommend that health professionals promote and advise more the practice of physical activity by pregnant women (Lindqvist, 2016). There was a significant reduction in physical exercise during pregnancy compared to pre-pregnancy practice, as well as intensity of very intense moderate pair) and in the duration of the activities (from 21-60 minutes to 21 to 30 minutes) (Hayman, 2016). Evidence on the safe water temperature was also collected for pregnant women who practice aquatic and aerobic exercises, reaching the result of 28 to 33 ° C (Brearley, 2015). Excessive responses to maternal physiological stress may increase the risk of obstetric complications, including preterm birth and low birth weight. This stress can induce premature labor

because high secretion of cortisol may disrupt hormonal regulation of the placenta and fetus, altering fetal growth by reducing placental perfusion due to elevated levels of cortisol and catecholamines (Field, 2006). Practice combines poses, breathing, meditation and relaxation. It has a relatively low exercise intensity and presents low risks of accidental fall and hard contact with other people (Field, 2006). Different studies, however with the same conclusion, realized that the practice of yoga (3x / week) by pregnant women presented immediate reductions in the salivary concentrations of cortisol and α -amylase after yoga and His classes had an improvement in their mood (Kusaka, 2016; Brearley, 2015 and Babbar, 2015).

CONCLUSION

This review identified the physical activities that can be practiced during pregnancy (walking, water aerobics, stationary cycling, low-impact aerobics, running, jogging and strength training, when authorized by the obstetrician accompanying the pregnant woman); yoga, and pilates as long as they avoid hypotension), frequency (150 minutes / week distributed according to the personal condition of each pregnant woman and with mild to moderate intensity), its benefits (such as weight gain control; cardiorespiratory fitness, provides adequate weight gain for the baby and leads the pregnant woman to a full-term birth, prevents diseases, increases self-confidence, quality of life and good form, and their physical, psychological and social constraints that hinder their performance, access to exercise sites, lack of understanding about exercise during pregnancy. Public health initiatives need to be developed to help increase women's participation in physical activities according to the main guidelines both before and during pregnancy and to address in detail the main principles of exercise prescription of frequency, intensity, time / duration and type of exercise. Health professionals need to be creative and adapt whenever necessary, promoting interventions based on population constraints. In addition to being up-to-date on the subject to promote awareness and encourage healthy pregnant women to engage in moderate to high intensity aerobic exercise in addition to supervised strength training based on their individual ability. Pre-sedentary women should also be encouraged to participate regularly in exercise during pregnancy to obtain associated health benefits for both the fetus and the fetus.

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