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Effect of the Pilates method on low back pain in pregnant women: a literature review

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Abstract: The present study aimed to verify in the literature the effects of the Pilates method a safe and effective therapeutic modality to obtain the relief of low back pain in pregnant women. This is a study of a literature review using the following databases: SciELO, Lilacs and PUBMED. The search in the database was performed using the following key words: Pilate's methods, pregnancy, low back pain. The articles surveyed were published in the period from 2016 to 2021. We found 38 scientific articles, of which four were used to date in this review, are works that address the Pilates method. The studies showed positive effects of the Pilates method on low back pain in pregnant women with decreased pain intensity.

Keywords: Pilate’s method. Pregnancy. Lumbago

1. Introduction

Pregnancy is a physiological process understood by the sequence of adaptations of the most varied systems from fertilization, resulting from changes hormones and biomechanics that cause structural changes in static and dynamic in the pregnant woman's body, which are fundamental to regulate maternal metabolism, aid in fetal growth and prepare the woman for the moment of labor and lactation (JUSTINO *et al.*, 2016).

There are some changes during gestational period. Among these changes, it is the increase of load and imbalance in the joint system due to the increase of body mass and its dimensions can cause disturbance of the center of gravity (CG) and greater oscillation of the force sceptor (FC), which lead to an unstable balance and influence the biomechanics of posture. (JUSTINO *et al.*, 2016).

With these alterations , the most common complaint may arise during pregnancy, pain in the lumbar spine, being conceptualized for presenting pain located in the lower region of the dorsum, in an area located between the last costal arch and the gluteal fold. (BARBOSA *et al.*, 2011).

According to Gomes *et. al.*, (2013) and Novaes, Shimo and Lopes (2006), lumbar pain is a symptom present prior to pregnancy, which intensifies during this period, and decreased mobility of the lumbar region in clinical exams and pain on palpation of the lumbar paravertebral muscles is observed.

There are many physical resources for the treatment of lumbar pain in pregnancy of which several low intensity treatments written in literature, the Pilates method deled by the German Joseph Hubertus Pilates (1880-1967) has been emphasis, considered safe and emphasize the work of the muscle’s stabilizers of the lumbar column spine (COTA *et al.*, 2019). For pregnant women, strengthening should prioritize the pelvic floor musculature, lumbar paravertebral, scapular waist and preferably involve large muscle groups, called "powerhouse" (NASCIMENTO *et al.*, 2014). The exercises are adapted according to the physical condition individually. (JUSTINO *et al.*, 2016 ; MANN *et al.*, 2011 ; MARÉS *et al.*, 2012 ; POSADZKI ; LIZIS ; DERENGOWSKA, 2011)

Due to the number of pregnant women who have a quadruped of low back pain impairing the functionality and quality of life of these women, the present study aimed to evaluate the effect of the Pilates method on the treatment of low back pain during pregnancy.

2. Methodology

This is a bibliographic study described as a study that constitutes a broader review methodology, which allows the inclusion of theoretical literature, as well as studies with different methodological approaches - quantitative and qualitative. The study was developed through a process of systematic analysis and synthesis, following the integrative

review format (CROSSETTI, 2012).

The studies involved in the review are systematically analyzed in relation to their objectives, methods and materials, enabling the reader to analyze the previous knowledge on the probed theme (POMPEO, ROSSI AND GALVÃO, 2010).

The collection was composed of scientific articles taken from electronic bases of scientific publications, and the following were identified: Scientific Electronic Library Online (SciELO), Latin American and Caribbean Literature on Health Sciences (Lilacs) and US National Library of Medicine (PUBMED).

The search in the database was performed using the following key words: backache, pregnancy, Pilate’s method. The *uni* terms or descriptors were previously identified in the Descriptors in Health Sciences (DeCS) and Medical Subject Heading (MeSH). In following a combination was performed through the Boolean connectors: gestation, method Pilates, backache,

The articles were selected in such a way that the theme of the studies was in the compatibility of the theme of this study and went through three phases for the selection process of inclusion and exclusion of articles, including them: first phase reading the theme of the study; second phase reading of the abstract of the article and third phase full reading of all the material.

Data analysis was performed in September 2021. Where it will be organized into tables, through Word, for descriptive analysis.

3. Results and Discussion

In the union of the three gestation terms AND Pilates Method AND backache ("pregnancy", "Pilates Method" and "low back pain"), with the Boolean operator AND using 3 databases, SciELO, Lilacs and PUBMED, in all, 20 publications were obtained, of which 11 stuccoes were in English, 9 in Portuguese. Among these 20, 3 were selected to make up the analysis and categorization proposed in this study. Thus, 17 studies were evaluated and excluded because it does not present a theme consistent with the one addressed in this study.

Table 1. Themes of the studies "Pilates Method", "Pregnancy", "Low back pain".

"Pilate’s method", "Pregnancy", "Low back pain".	No.
Pilate’s method	1
Gestation	1
Lumbago	1
Total	3

Source: Prepared by the researcher based on the studies found in the studies.

In the union of the descriptors gestation AND method

Pilates AND backache ("Pregnancy", "Pilates Method" and "low back pain"), with the Boolean operator AND using 3 databases, SciELO, Lilacs and PUBMED, in all, 20 publications were obtained, among these, 4 were selected to make up the analysis and categorization proposed in this study. Thus, 16 studies were evaluated and excluded because they do not present a theme consistent with the one addressed in this study.

Table 2. Themes of the studies "Low back pain", "Management", 'Pilates Method'.

"Low back pain", "Pregnancy", Pilate's method".	No.
Lumbago	1
Gestation	2
Pilate's method	1
Total	4

Source: Prepared by the researcher based on the studies found in the studies.

In the union of the descriptors gestation AND method Pilates AND backache ("Gestation", "Pilate's method" and "low back"), with the Boolean operator AND using 3 databases, SciELO, Lilacs and PUBMED, in all, 11 publications were obtained, among these, 3 were selected to make up the analysis and categorization proposed in this study. Thus, 8 studies were evaluated and excluded because they do not present a theme consistent with the one addressed in this study.

Table 3. Themes of the studies "Pregnancy", "Pilates Method", "Low back pain".

"Pregnancy", "Pilates Method", "Low back pain	No.
Gestation	1
Pilate's method	1
Lumbago	1
Total	3

From this evaluation of the publications, the following articles were obtained for discussion:

Table 4. Selected articles

Nº	ORIGIN	ARTICLE TITLE	AUTHORS	YEAR	CONSIDERATIONS THEMATIC
01	Rev. Brasil Physiotherapy	Effects of a pilates-based physical therapy approach for patients diagnosed with low back pain during pregnancy.	MACHADO, C.A.N.R.	2006	This study demonstrated that Postural Pilates for pregnant women can have positive effects on minimizing of the disease caused by low back pain in the population studied.
02	Rev Ciên Health	Effects of the pilates method	COTA, M. E.;	2011	The studies showed positive effects of the

		on low back pain in pregnant women: a systematic review	METZKER, C. A. B.;		Pilates method on low back pain in pregnant women.
03	Electronic Journal Health and Science	The effects of the Pilates method on low back pain: Literature review.	PEREIRA, C.M.; JUNIOR, A. J.C.; CAMPOS, R. S	2013	Studies show that the Pilates method is effective in treatment, as it improves abdominal and paravertebral muscle strength, increases flexibility, body awareness.
04	Monograph (Graduation in Physiotherapy) State Of Paraíba	The efficacy of the pilates method in low back pain in pregnant women.	SANTOS, T.F.	2014	It was confirmed that the Pilates Method decreases low back pain, besides improving the quality of life of pregnant women.
05	Rev. UEPG Ci. Biol. Health, Ponta Grossa	Effect of pilates method on pregnant women - study Randomized controlled trial.	JUSTINO, B. S.; PEREIRA W.M. P.;	2016	This study showed a reduction in the intensity of low back pain in pregnant women, however, it was not statistically significant improvement was observed in the oscillation of the center of body mass.
06	Electronic Connection Magazine	The benefits of the Pilates Method in the treatment of low back pain during pregnancy.	SANTOS, L.B.; KRAIEVSK I, E. S.	2017	The method not only helps in postural improvement, but helps in coordination, balance.
07	Rev. Brazilian Company of Scientific Production	The benefits of the Pilates Method in the gestational period: a literature review.	LAMB, C.C.; BRAZIL, D. P.; Gonçalves, D.C.	2018	It is concluded that the pilates method is considered of great efficacy, as it brings benefits to pregnant women according to their needs.
08	Rev. Physical therapy on the go	Effect of different pilates method completions on lumbar and thoracic spine curvature angles.	SILVA JM ET AL.	2018	The studies showed improvement in body alignment due to pilates exercises.

09	Rev. Br. G. Pain. Sao Paulo	Effect of the Pilates method on the treatment of chronic low back pain: clinical, controlled and Randomized.	SILVA, P. H.B. S. <i>et al.</i>	2018	This study showed that the method was effective for the studied and adequate to the treatment of chronic low back pain, but was not superior to conventional physiotherapy.
10	Cathedral Magazine	The benefits of the pilates method in view of the changes in the gestational period.	PEREIRA, N.S.; REGO, B. A. C. <i>et al.</i>	2020	Studies show that the practice of Pilates exercises during the gestational period has several benefits in the evolution of pregnancy, during and after delivery, as well as the baby, and should be well guided by the physiotherapist professional.

4. Conclusions

According to the results of this study, the performance of the Pilates Method during pregnancy brings excellent results for pregnant women in the treatment on the lumbar and should be performed under the guidance of a physiotherapist with exercises that adapt to each period of pregnancy development, having efficacy in musculoskeletal, respiratory alterations. The reduction of low back pain can be attributed to the improvement of overall flexibility, because by reducing the excess of articulating compression there will be positive consequences in postural control, strengthening the stabilization of the trunk, acting on body alignment and balance, improving lumbar and pelvic mobility.

Therefore, this study revealed that Pilates for pregnant women can bring positive effects in minimizing the injuries caused by low back pain. However, it is necessary to disengage from more controlled clinical studies in this area proving the veracity of the traffic that can help in the physical and emotional well-being of the pregnant woman.

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