

## To Analyze Pilates' Impact on the Childbirth Process and its Results in Pregnant Females : Observational Study

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### ABSTRACT

**Background:** Pilates Method as been a popular background for almost a century and is now used worldwide as a form of fitness and holistic health because it can be tailored to individual needs and fitness levels. Lucia first advised mat exercises performed on the floor, adapting them to individual physical and temporal constraints without compromising the wider element. He later labeled a series of specialized devices, including springs and rollers, that provide resistance to develop divergent movement patterns.<sup>13</sup>

Performing exercise with medium intensity has positive effects on the maternal health. The goal of obstetric care is to provide the right conditions for a safe delivery and make it a pleasant experience. Labor pain is an unavoidable component of child birth whose proper management, despite the great advances in midwifery, is still one of the major challenges related to women's health. Pregnant women should also be clinically evaluated be-fore starting exercise to ensure there is no medical reason to stop exercising.

**Methods:** Patients were randomly divided into two groups of 15 people in each group. In the intervention group, a Pilates exercise program was developed in collaboration with a Pilates trainer. The program was tailored to the susceptibility of pregnant women and was administered twice weekly for 8 weeks.

Four tools were used in this study, including a two-part checklist, the Borg Rating of Perceived Exertion (RPE), the Visual Analogue Scale (VAS), and the McKee Childbirth Satisfaction Rating Scale. A two-section checklist was used in this study to collect the required information.

**Conclusion:** According to the results of this study, Pilates exercise during pregnancy is a safe method to reduce the length of the active phase and second stage of labor, reduce labor pain, and increase maternal satisfaction with the childbirth process. However, Pilates exercise did not significantly reduce the need to episiotomy and caesarean section.

**Keywords:** PILATES METHODS( PM), VAS, RPE, Mckee childbirth satisfaction rating scale, pregnant females.

**Consent:** informed consent was taken from all participants in the study for the publication work in the journal.

### INTRODUCTION

The World Health Organization (WHO) defines health as complete physical, mental and social well-being, not simply the absence of disease or physical, mental or moral weaknesses or deficiencies.

PM has been described as a form of mental and physical conditioning and its philosophy

is to train the mind and body to work together toward overall fitness goals. It is a series of exercises or poses linked together in specific ways to increase circulation, flexibility and strengthen specific areas of the body. It has been suggested that it develops evenly, corrects improper posture, restores physical vitality, invigorates the mind, and uplifts the spirit.<sup>14-15</sup>

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PM is designed to restore physical fitness through the development of strength, flexibility, natural grace and ability that are reflected in all aspects of life without undue physical fatigue or mental strain increase. It corrects postural imbalances, increases strength, awakens the mind and spirit, and helps improve the whole body. The mental aspect of PM is evident in the increased focus on breathing and concentration when performing movements.<sup>16</sup>

Pilates is considered the leading exercise for improving physical, mental and motor function. This exercise includes a series of low pressure exercises that increase strength and flexibility throughout the body. Using standard breathing techniques is very important in Pilates and helps to improve pelvic and core strength, especially the transversus abdominis muscles associated with the pelvis.<sup>24</sup>

## METHODOLOGY

The current study was conducted in the physiotherapy department of Career Institute of Medical Science Bhopal.

### Inclusion criteria

1. Age between 18-35 years
2. First and single pregnancy
3. Gestational age between 26 and 28 weeks
4. Normal body mass index.

### Exclusion criteria

1. Pregnancy hyper tension and gestational diabetes
2. Prohibition to do exercise during pregnancy
3. Absence from more than 2 sessions in the exercise program
4. Withdrawal from the study

Patients were randomly divided into two groups of 15 people in each group. In the intervention group, a Pilates exercise program was developed in collaboration with a Pilates trainer. The program was tailored to the susceptibility of pregnant women and was administered twice weekly for 8 weeks. Intervention participants were asked to choose a number between 6 and

20 that relates to the intensity of effort required to perform the exercise. Exercise started at light intensity and increased intensity after two weeks of conditioning.

In the control group, Patient received regular pregnancy counseling by phone once every 2 weeks, participated in daily activities, and did not participate in a regular exercise program. During pregnancy and Postpartum, care was provided according to hospital standard and routine protocols in both the intervention and control groups. A checklist tailored to each group studied was completed during distribution.

Four tools were used in this study, including a two-part checklist, the Borg Rating of Perceived Exertion (RPE), the Visual Analogue Scale (VAS), and the McKee Childbirth Satisfaction Rating Scale. A two-section checklist was used in this study to collect the required information. In the first section, surveyed demographic information was recorded.

Labor pain intensity was measured using a visual pain scale (VAS) consisting of a 10 cm long horizontal line with a score of 0 for no pain and a score of 10 for maximal pain. The Mackey Childbirth Satisfaction Rating Scale was used to measure maternal satisfaction with childbirth. It contained 22 items on four subscales. Hersatisfaction with maternal performance, maternal satisfaction with midwife's performance, satisfaction with infant condition, and overall satisfaction with labor and delivery experience.

## DATA ANALYSIS AND RESULTS

The main aim of the present study is to examine the effect of Pilates on the childbirth process and its outcomes in pregnant females. The total subjects enrolled for the study were 30, divided into two groups of 15 subjects in group A and group B. All subjects were 18-35 years old.

The data were analysed using repeated measures of unpaired student 't' test to find the significance of interventions used within the groups and then the same test was used for the above-mentioned parameters to find the significance between both the groups.

**Table No 1. The comparison of Gestational Age in control versus experimental group .**

Study Group	Control Group	Experimental Group	t Value	p-Value
Gestational Age	26.30 ± 1.04	25.78±1.20	1.26	>0.05***
*p<0.001, which is considered to be highly significant **p<0.05, which is considered to be significant *** Non-Significant				

**Table 2: The comparison of length of labor in control versus experimental group .**

Study Group	Control Group	Experimental Group	t Value	p-Value
Length of Labor	258.20± 14.24	168.07±16.46	16.03	p<0.0001*
*p<0.001, which is considered to be highly significant **p<0.05, which is considered to be significant *** Non-Significant				

## DISCUSSION

The aim of this study was to investigate the effect of Pilates exercise on the outcomes of childbirth in pregnant women. According to the results of the present study, Pilates had a positive effect on the severity of labor pain in the active phase, the length of the active phase and second stage of labor, and maternal satisfaction with childbirth.<sup>18-20</sup> Nevertheless, there was no association between Pilates exercise during pregnancy and need to oxytocin to increase labor pain, episiotomy, type of delivery, and first- and fifth -minute Apgar scores.<sup>20</sup>

In a study by Perales, in contrast, physical activity during pregnancy caused the first stage to be shorter but had no effect on the length of the second stage of labor. Although in the present study Pilates did not significantly affect the need for oxytocin to augmentation of labor pain, the need for infusion of oxytocin was lower in the intervention group than that in the control group. The results of the present study showed no effect of Pilates exercise during pregnancy on the type of delivery. Studies of Rodríguez and Sarpkaya Güder showed a statistically significant difference in the type of delivery between Pilates and control groups, with the number of normal deliveries being higher in the Pilates group.<sup>15</sup>

The main difference between the intervention groups was in the intensity of exercise. It seems that the evidence supporting the role of exercise

in reducing the rate of primary cesarean section is due to differences in the amount of exercise. Barakat did not find any difference between the control group and active people who did only light exercise 3 days a week during pregnancy. A review and meta-analysis showed that women who did aerobic exercise for 30 to 60 min 2-7 times a week had a significantly reduced risk of caesarean delivery.<sup>23</sup> The results of this study showed that moderate-intensity Pilates exercise twice a week alone had no effect on increasing the rate of natural childbirth in primiparous women, and that most young primiparous women had a better chance of having a normal delivery. Also, due to the cancellation of face-to-face sessions following the outbreak of the coronavirus and doing the exercises at home, it seems likely that doing exercise in the presence of a coach will yield different results.<sup>24</sup>

In Price and Melzer, in their study of the effect of physical activity during pregnancy on birth outcomes, found that physical activity during pregnancy had no effect on neonatal Apgar scores. This is consistent with current research. In contrast, in a study by Aktan and Sarpkaya Güder, Pilates exercise during pregnancy caused a statistically significant difference between the intervention and control groups in terms of initial and her 5-minute Apgar scores, which was consistent with the present study.<sup>15</sup> Inconsistent. One of the reasons Pilates does not affect Apgar scores may be due to the fact that in research

settings, caesarean sections are expedited when there are risk factors for low Apgar scores in babies. This is one of the reasons for the decrease in cases with low Apgar scores. No adverse effects on neonatal outcomes were observed in this study<sup>16</sup>.

Consistent with the current study, a study by Sarpkaya Güder found that compared to controls, women who performed Pilates exercises during pregnancy felt safer during labor, coped better during labor; It was good overall with few issues. Satisfied with the delivery experience. Bolanthakodi's study found that practicing yoga during pregnancy made mothers happier during the birth process. Navaz<sup>17</sup> also showed that control of labor through exercise (without epidural) during pregnancy improved the mother's birth experience and had long-term effects on subsequent pregnancies. In our study, Pilates also influenced maternal satisfaction with childbirth. According to the results and participants, labor time was reduced, pain intensity during labor was reduced, and breathing during labor was improved. The use of and relaxation (learned in exercise sessions during pregnancy) can ultimately help ease the labor experience and increase a woman's satisfaction with the labor process<sup>18</sup>.

This study had several strengths. First: One of the strengths of this study was that the selection of primiparous women prevented individual experiences of previous births from influencing the study results. Second: The lack of concomitant drugs to reduce labor pain made the role of prenatal exercise in reducing the severity of labor pain more real. Third: Cox regression analysis and Kaplan-Meier survival analysis were used to calculate total hours worked. Survival analysis is a useful technique when many confounding factors influence study results.<sup>19</sup> This data analysis method censors these factors. One of the limitations of current research is the deterioration of the mental status of pregnant women during exercise due to the spread of the Covid-19 virus. There are other important restrictions as well.<sup>10</sup>

This study included only low-risk and nulliparous pregnant women, so the current

results cannot be generalized to mothers with high-risk pregnancies or multiple births. Also, the lack of exercise in the control group left the question of whether a Pilates exercise program would prove more valuable during pregnancy and childbirth compared to other sports. Finally, the results of the study could not be evaluated in women undergoing caesarean section, so an intention-to-treat analysis was not possible.

## Conclusion

According to the results of this study, Pilates exercised during pregnancy is a safe method to reduce the length of the active phase and second stage of labor, reduce labor pain, and increase maternal satisfaction with the childbirth process. However, Pilates exercise did not significantly reduce the need to episiotomy and caesarean section. It was not possible for us to assess outcomes such as episiotomy and duration of the active phase and second stage, as well as the severity of pain during labor in some mothers due to caesarean section.

Although in this study performing these exercises during pregnancy did not cause side effects for the mother and baby, more detailed studies with a larger sample size are needed to prove the effectiveness and safety of this exercise during pregnancy.

**Ethical clearance:** this study was approved by our institutional ethical committee.

**Source of funding:** self

**Conflict of interest:** nil

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