

## **Effectiveness of Structured Fetal Optimization Movements on Changes in Presentation From Breech to Head at 28-36 Weeks of Pregnancy at Smilebirth**

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<b>Article Info</b>	<b>ABSTRACT</b>
<p><b>Corresponding Author:</b> Yolanda Cristyaningsih Email: ycristya@gmail.com</p>	<p>Pregnancies with breech presentation carry a higher risk of complications, including cesarean delivery. Structured fetal optimization exercises offer an alternative to convert breech presentation to cephalic presentation. This study aims to analyze the effectiveness of these exercises in increasing the likelihood of normal delivery. The research employs a quasi-experimental design (pretest and posttest without a control group) involving 46 pregnant women between 28–36 weeks of gestation participating in the "Optimizing Fetal Positioning" program at Smilebirth. The sampling technique used was accidental sampling. Data were analyzed using the Wilcoxon Signed Rank Test to evaluate changes in fetal presentation before and after the intervention. Most respondents (95.7%) were aged 20–35 years with a gestational age of 28–32 weeks. Prior to the intervention, all fetuses (100%) were in breech presentation. Post-intervention, 87% of fetuses successfully shifted to cephalic presentation, while 13% remained in breech. Maternal adherence to the program significantly influenced intervention outcomes. Structured fetal optimization exercises were found to be effective in converting breech to cephalic presentation in pregnancies between 28–36 weeks, particularly in cases with earlier gestational age and high compliance. These findings support the use of the "Optimizing Fetal Positioning" program as a non-invasive intervention to increase the likelihood of normal delivery.</p>

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**Keywords:**

*Breech Presentation, Structured Fetal Position Optimization Movements, Pregnancy at 28–36 Weeks, Normal Delivery, Optimizing Fetal Positioning*

## 1. INTRODUCTION

Pregnancy is a physiological process that may be accompanied by complications, one of which is fetal malpresentation (Ecker et al., 2017). Breech presentation is one of the most common types of malpresentation, with a prevalence of 37.1% at 25–28 weeks of gestation, decreasing to 2.5% at term (Gimovsky, 2016). This condition can lead to prolonged labor or necessitate a cesarean section (Prawirohardjo, 2016). One of the factors contributing to labor-related challenges or complications in Indonesia is fetal malpresentation, which accounts for 3.1% (Tim Riskesdas 2018, 2018).

Various methods have been employed to address breech presentation, such as the knee-chest position and External Cephalic Version (ECV), though their success rates remain variable (Verhaeghe et al., 2021). In *Spinning Babies*, Tully suggests that besides the knee-chest position, other movements such as forward leaning inversion and breech tilt can help turn a breech presentation into a cephalic presentation (Tully, 2017, 2022).

Another alternative is Structured Fetal Optimization Movements. Structured Fetal Optimization Movements involve a series of body positions performed in a planned manner with the goal of achieving an optimal fetal presentation that benefits the delivery process, organized and arranged systematically (Smilebirth, 2023).

This movement has been implemented at Smilebirth through the Optimizing Fetal Positioning program, successfully converting breech presentation to head presentation in 89.47% of 38 pregnant women in a preliminary survey (Smilebirth, 2023).

The Menu of Structured Fetal Positioning Optimization Exercises includes various techniques aimed at improving fetal positioning and maternal comfort. These techniques are Diaphragmatic Breathing, a deep breathing exercise to relax and strengthen the diaphragm, improving overall breathing quality; Chest Breathing, an exercise to enhance lung capacity and chest flexibility, supporting respiratory efficiency; Shawl Sifting, a technique using a shawl to relax pelvic ligaments and help the fetus achieve a balanced position; Side Lying Release, a pelvic muscle stretch that provides more space for the fetus; Forward Leaning Inversion, an inverted position that creates space in the uterus, allowing the fetus to rotate to an optimal position; Breech Tilt, an inversion

exercise that assists in turning a breech fetus into a cephalic presentation; Knee-Chest Position, a kneeling posture with the chest resting on a surface to facilitate fetal rotation; and Resting Smart, a resting position with an open and relaxed pelvis to enhance maternal comfort (Harahap et al., 2021; Harjanti & Miskiyah, 2017; Pahlawi et al., 2019; Rahmawati et al., 2023; Rusmanto et al., 2020; Smilebirth, 2023; Tully, 2017, 2020, 2022).

The exercises are conducted over seven days with predetermined durations and repetitions, including diaphragmatic breathing, chest breathing, shawl sifting, side-lying release, forward leaning inversion, breech tilt, knee-chest, and resting smart.

This study aims to evaluate the effectiveness of structured fetal optimization exercises in converting breech presentation to cephalic presentation during pregnancies between 28 and 36 weeks, providing a practical and systematic solution for expectant mothers.

## 2. METHOD

This study was conducted with Ethical Clearance No. 2407/UKH.L.02/EC/X/2024. The research utilized a quasi-experimental design without a control group (one-group pretest-posttest design), where measurements were taken before (pretest) and after (posttest) the intervention. This design allows for the evaluation of the effectiveness of Structured Fetal Optimization Exercises on changes in fetal presentation.

The study population consisted of 86 pregnant women with breech presentation who participated in the Optimizing Fetal Positioning (OFP) program at Smilebirth from May to June 2024. A sample of 46 respondents was determined using the Slovin formula and accidental sampling technique. Inclusion criteria included; pregnant women between 28–36 weeks of gestation, no history of complications such as miscarriage or placenta previa leading to spotting, Ultrasound or clinical findings indicating breech presentation, and willingness to participate in the program virtually.

The research was conducted virtually within the Smilebirth community, with respondents located across Indonesia and internationally in regions such as Maryland and Pennsylvania, USA. The study was carried out in July 2024, encompassing observation, intervention, and data collection phases

The research instruments included observation sheets to record the quality, duration, and adherence to the implementation of the Structured Fetal Optimization Exercises, as well as the results of ultrasound and palpation examinations. Data were collected virtually through the completion of observation sheets by respondents after the 7-day intervention. Changes in fetal presentation were confirmed through ultrasound examinations conducted within 14 days after the exercises.

Then the characteristics of the respondents, as well as the pre-test and post-test results, were analyzed using univariate analysis to determine their frequency distribution. Bivariate analysis with the Wilcoxon Test was conducted to determine the effectiveness of the exercises.

**3. RESULTS**

**a. Characteristics Based on Respondent Age**

Table 1. Frequency Distribution of Respondent Age

Age (Years)	Frequency (f)	Percentage (%)
20-35	44	95.7
>35	2	4.3
Total	46	100.0

Source: Primary Data 2024

Table 1 shows that the respondents aged 20-35 years totaled 44 individuals, representing 95.7%.

**b. Characteristics Based on Gestational Age**

Table 2. Frequency Distribution of Gestational Age

Gestational Age (Weeks)	Frequency (f)	Percentage (%)
28	11	23.9
29	4	8.7
30	4	8.7
31	6	13.0
32	11	23.9
33	6	13.0
34	1	2.2
35	3	6.5
Total	46	100.0

Source: Primary Data 2024

Table 2 shows the frequency distribution of respondents based on their gestational age in weeks. Of the total 46 respondents, the highest number of pregnancies were at 28 and 32 weeks, with 11 respondents each, representing 23.9%.

**c. Based on the Number of Pregnancies or Gravida**

Table 3. Frequency Distribution of Number of Pregnancies or Gravida

Gravida	Frequency (f)	Percentage (%)
1	29	63.0
2	14	30.4
3	2	4.3
4	1	2.2
Total	46	100.0

Source: Primary Data 2024

Table 3 shows that the majority of respondents were primigravida (first-time pregnancies), with 29 respondents (63.0%).

**3.1.1 Based on Respondent Compliance**

Table 4. Frequency Distribution Based on Respondent Compliance

Compliance	Frequency (f)	Percentage (%)
Not Compliant	2	4.3
Compliant	44	95.7
Total	46	100.0

Source: Primary Data 2024

Table 4 shows that the majority of respondents were compliant in performing the Optimal Fetal Positioning (OFP) exercises, with 44 respondents (95.7%) completing all 56 exercise points within one week.

**d. Based on Respondent Occupation**

Table 5. Frequency Distribution Based on Respondent Occupation

Occupation	Frequency (f)	Percentage (%)
Civil Servant	7	15.2
Auditor	1	2.2
Midwife	1	2.2
Doctor	2	4.3
Lecturer	1	2.2
Teacher	1	2.2
Housewife	19	41.3
Employee	1	2.2
Private	13	28.3
Total	46	100.0

Source: Primary Data 2024

Within this category, occupations are divided into two main groups: housewives, comprising 19 respondents (41.3%) who generally had more time at home, and other occupations, including 27 respondents (58.7%) who were employed outside the home across various professions.

**e. Changes in Fetal Presentation**

Table 6. Pre-Test and Post-Test Results

	Fetal Presentation	Frequency (f)	Percentage (%)
Pre Test	Breech	46	100.0
Post Test	Breech	6	13.0
	Cephalic	40	87.0
	Total	46	100.0

Source: Primary Data 2024

Table 6 highlights changes in fetal presentation before and after the intervention. In the pre-test phase, all 46 respondents (100%) had breech presentation. Following the structured fetal optimization exercises, 40 respondents (87.0%) achieved cephalic presentation, while 6 respondents (13.0%) remained in breech presentation.

**f. Effectiveness of Structured Fetal Optimization Exercises in Changing Breech to Cephalic Presentation During 28–36 Weeks of Pregnancy**

Table 7. Fetal Presentation Changes Before and After Structured Fetal Optimization Exercises with Wilcoxon Signed-Rank Test

Condition	Number of Respondents	%	<i>p-value</i>
Breech Presentation Before Intervention	46	100	-
Cephalic Presentation After Intervention	40	87	0.000
Breech Presentation After Intervention	6	13	0.000

Source: Primary Data 2024

Table 7 displays the bivariate analysis results, showing that before the intervention, all respondents (100%) had a breech presentation. After the intervention, 87% (40 out of 46 respondents) successfully shifted from breech to cephalic presentation, while 13% (6 respondents) remained in breech presentation despite completing the intervention.

Based on Table 7, the results of the Wilcoxon Signed-Rank Test show a Z-value of -6.325 with an Asymp. Sig. (2-tailed) of 0.000. Since the

significance value (p-value) is less than 0.05, it can be concluded that there is a significant change in fetal presentation before and after the intervention exercises.

**4. DISCUSSION**

**a. Characteristics of Respondents**

This study involved 46 pregnant women, with the majority of respondents (95.7%) being in the ideal reproductive age range of 20–35 years. This age range aligns with the recommendations of the Ministry of Health of the Republic of Indonesia, to reduce the risk of pregnancy complications, most respondents were in the gestational age range of 28 and 32 weeks, a critical period for fetal position interventions, as there is still enough space in the uterus for the fetus to rotate (Kemenkes RI, 2023).

A total of 63% of respondents were primigravida, or first-time pregnant women, who tend to require additional support due to heightened anxiety, particularly in pregnancies with breech presentation. This aligns with the findings of Schauer et al. which highlight the importance of psychological support from partners and healthcare providers in reducing mental stress (Schauer et al., 2023).

In terms of occupation, 58.7% of respondents worked outside the home, while the rest were homemakers. Despite time constraints faced by working mothers, the adherence rate to the structured fetal optimization exercises reached 95.7%. This reflects the effectiveness of the Structured Fetal Optimization Exercises through the Optimizing Fetal Positioning (OFP) program, which is conducted online. This service enables pregnant women from various occupational backgrounds to participate in training independently, following standardized protocols, and empowering them to consistently carry out the exercises.

**b. Fetal Presentation Changes**

This study reveals that prior to the intervention, all respondents (100%)

presented with breech positions. Following the Structured Fetal Optimization Exercises, 87% successfully shifted to cephalic presentation, while 13% (6 respondents) remained in breech presentation.

The success of positional changes in the fetus was influenced by various factors, including gestational age, adherence to the Optimizing Fetal Positioning (OFP) program, and individual physical characteristics. Respondents who did not achieve a positional change generally had gestational ages approaching term or faced challenges such as reduced uterine elasticity, limited amniotic fluid volume, or a history of pregnancies with breech presentations (Smilebirth, 2023).

These findings align with studies by Tully (Tully, 2017) and Ilhamjaya & Tawali (Ilhamjaya & Tawali, 2020), which emphasize that factors such as uterine muscle condition, placental position, amniotic fluid volume, and ligament elasticity significantly affect fetal positioning. Additionally, advanced gestational age, the relative size of the fetal head compared to the pelvic inlet, and individual anatomical factors also play a critical role in the success of interventions (Caron J. Gray & Shanahan., 2022; Khumaira, 2012). These results support the theory that fetal position changes are influenced by physiological factors unique to each individual, underscoring the importance of tailored interventions in optimizing fetal positioning.

**c. Effectiveness of Structured Fetal Optimization Movements on Changes in Presentation From Breech to Head at 28-36 Weeks of Pregnancy**

This study demonstrates that Structured Fetal Optimization Exercises are effective in converting fetal presentation from breech to cephalic, achieving a success rate of 87%. These findings align with studies by Harjanti & Miskiyah (Harjanti & Miskiyah, 2017), Lestari (Lestari, 2019), and Inayah (Inayah, 2022), which indicate that positional exercises or physical activities, such as the knee-chest position or acupressure, facilitate fetal position changes during the late second and early third trimesters.

The effectiveness of the intervention is supported by the structured exercise design,

including inversion poses performed consistently four times daily at 28–36 weeks of gestation, a period when the uterine space is still sufficient for fetal movement. These results corroborate theories suggesting that maternal positions and movements during pregnancy influence fetal presentation (Harjanti & Miskiyah, 2017; Lestari, 2019).

Statistical analysis using the Wilcoxon test revealed a significant difference between pre-test and post-test results ( $Z = -6.325$ ,  $p\text{-value} = 0.000$ ), confirming the efficacy of Structured Fetal Optimization Exercises in altering fetal position. Furthermore, this finding aligns with Inayah (Inayah, 2022), who reported that a series of prenatal yoga exercises was more effective than the knee-chest position in changing breech presentation, highlighting the importance of a well-designed and structured exercise program.

## **5. CONCLUSION**

The study concluded that Structured Fetal Position Optimization Movements were effective in converting fetal presentation from breech to cephalic in 87% of respondents, with success influenced by gestational age, program adherence, and physiological factors such as uterine elasticity and amniotic fluid volume. Most respondents (95.7%) were within the ideal reproductive age of 20–35 years, with 63% being primigravida, requiring additional support. The Optimizing Fetal Positioning (OFP) program, facilitated through online services, increased adherence even among working women. Implementing structured exercises during the optimal gestational period of 28–36 weeks aligns with prior evidence showing positional techniques like knee-chest and prenatal yoga effectively support fetal rotation, preparing the fetus for an optimal cephalic position and reducing complications related to breech presentation.

The researcher extends heartfelt gratitude to all respondents and collaborators who contributed to the success of this study. Their participation and support were invaluable in achieving the research objectives. Structured Fetal Position Optimization Movements Exercises are recommended as an effective intervention for correcting breech presentation to cephalic during gestational weeks 28–36, particularly for those

seeking a time-efficient and well-structured approach.

Future research should explore other factors influencing the effectiveness of these exercises, such as uterine muscle elasticity and amniotic fluid volume, and consider conducting comparative studies with control groups to enhance the understanding and application of this intervention.

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