

THE EFFECT OF BIRTH BALL USE ON LABOR PROGRESS: A LITERATURE REVIEW

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Pregnancy; Birth Ball; Length of Labor.

ABSTRACT

The problem of the high number of MMR and IMR in Indonesia is that there are still many prolonged labor which is one of the several causes of maternal and newborn mortality. One of the therapies that can be done to prevent this is the use of Birth balls. Birth balls can prevent maternal fatigue caused by long duration of labor. The purpose of this article was to provide an overview of the effect of birth ball exercises on the progress of the first stage of labor. This research used the Literature Review method. The sampling method used purposive sampling technique by selecting articles with appropriate topics. The results of the study through the stages of identification, screening, eligibility and include, found that there was an effect of giving birth ball exercises therapy in accelerating the progress of labor in maternity mothers. This is because the birth ball exercise is able to relieve pressure and increase the area of the pelvis, encourage the baby's head to descend, help uterine contractions more effectively, accelerate cervical dilation, and help to relax the ligaments in the pelvis.

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Introduction

According to the World Health Organization (WHO) report, maternal deaths generally occur due to complications during, and after pregnancy. The types of complications that cause the majority of maternal death cases, about 75% of the total maternal death cases, are bleeding, infection, high blood pressure during pregnancy, labor complications, and unsafe abortion. One of the complications of labor that contributes to maternal mortality is prolonged partusm (PERTASARI, 2022).

The high maternal mortality rate (MMR) in Indonesia due to childbirth ranks 3rd highest in ASEAN after Laos and Myanmar. One of the factors affecting labor is power. If the power weakens, it will save the labor process (Anuhgera, Ritonga, Sitorus, &

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Simarmata, 2021). Problems in Indonesia itself are still found including prolonged partus which is one of several causes of maternal and newborn deaths.

Prolonged parturition is one of the causes of maternal mortality. However, the number is not as much as bleeding and hypertension. Still, if not treated immediately or prevented beforehand, it will cause complications and emergencies for both the mother and the baby. Long partuses can cause bleeding, shock, and death in the mother and can cause fetal distress, asphyxia, and caput (Wigati & Mualimah, 2021). Factors that can affect the length of labor are: maternal characteristics, body mass index, maternal age, parity, oxytocin administration, epidural analgesics (Mutoharoh, Indrayani, & Kusumastuti, 2020). Meanwhile, another factor that affects the length of labor is the state of the pelvis. Pelvic deformities can hinder the labor process. Fetal location and presentation are an important part of the labor process (Wigati & Mualimah, 2021).

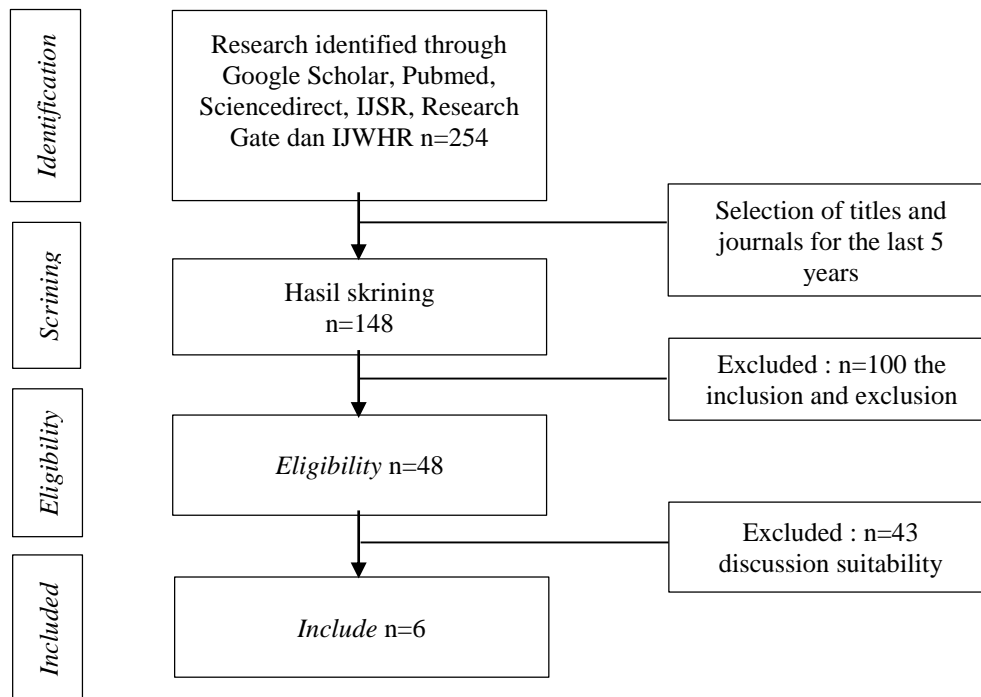
The Birth Ball is a physical therapy ball that assists labor and can be used in various positions, namely sitting on the ball and wiggling the pelvis, which is thought to provide comfort and speed up labor time. Using the Birth Ball during pregnancy stimulates postural reflexes and maintains the muscles that support the spine. Pelvic Rocking can also be done by rocking the pelvis back and forth. Pelvic rocking exercises can train the waist and buttock muscles and help lower the baby's head into the pelvic cavity of the birth canal. (Junaida, et al. 2021).

The active phase becomes shorter with the use of birth balls, which can prevent fatigue in laboring mothers caused by the long duration of labor. Fatigue during childbirth which includes physical and mental discomfort during labor can be prevented as much as possible because fatigue in labor can cause delays in cervical dilatation or complications in the first stage of the active phase (Salamah & Putri, 2022). The American College of Obstetricians and Gynecologists in Artal (2003) mentions in the journal Umi Salamah and Alfi Aulia (2022) the conditions of laboring mothers who are not recommended to exercise are mothers who give birth with liver disease or lung disease, incompetent cervix, multiple pregnancies, premature birth, antepartum bleeding, premature rupture of membranes, mothers with hypertension and decreased fetal movement.

The purpose of writing this literature review is to review several journals that we used as literature in writing this journal so as to evaluate the effectiveness and benefits of using birth balls to progress opening during labor.

Methods

The purpose of this review is to further examine the effects of birth ball use on pregnant women in labor. This study is a literature review study that tries to explore more information about the effects of birth ball use on pregnant women in labor. Sources for conducting this literature review included a systematic search of computerized databases including Google Scholar, Pubmed, Sciencedirect, IJSR, Research Gate and IJWHR. The search used the keywords pregnancy, birth ball and labor. Research journals were used from 2017 to 2022. The studies were analyzed according to the inclusion and exclusion criteria.



Result and Discussion

Researcher and Year	Methods and Procedures	Results
(Mu'alimah & Wigati, 2022)	<ol style="list-style-type: none"> 1. <i>Method: Quasi-experiment research with posttest control design</i> 2. <i>Samples: 32 respondents with a population of all mothers with a gestational age of 36-40 weeks</i> 3. <i>Procedure: Physical movement patterned with pelvic rocking</i> 	Result: the mean value of the length of labor time when I was between the treatment group was 7.2500 and the control group 10.1562. The value of P-value = 0.0000 < the value of α 0.05, which means that there is a difference in the length of the delivery time of the first stage labor in the treatment and control groups.
(Fahlevie, Anggraini, & Yunola, 2022)	<ol style="list-style-type: none"> 1. <i>Method: Pre-experimental analytical research with an Intact-Group Comparison design</i> 2. <i>Samples: 30 respondents, there were 15 (50%) women who gave birth who became the treatment group using Birth Ball and there were 15 people (50%) of women who became the control group.</i> 	Result: p-value = 0.002 < 0.05, which means that there is an effectiveness of Birth Ball on the duration of the 1st active phase of primigravida.

	3. <i>Procedure:</i> <i>The respondent sat on the ball when he entered the first stage of the active phase with back and forth movements, left and right side then rotated clockwise.</i>	
Umi Salamah, Alfi Aulia Putri (2022)	1. <i>Method: Analytic research with cross sectional design</i> 2. <i>Samples: 113</i> 3. <i>Procedure: pelvic rocking technique</i>	Result: From the results of statistical tests there is a value of $p = 0.04 = 0.05$ so that there is a relationship between the use of a gym ball on the length of the first stage of labor prove that there is an effect of using a gymball on the progress of labor in the active phase I in partum mother.
Alexandre Delgado, Tuíra Maíaa, Renato S. Melo, Andrea Lemos (2019)	1. <i>Method: Systematic Review for all randomized clinical trials (RCTs) or quasi-randomized</i> 2. <i>Samples: 7 studies included</i> 3. <i>Procedure: Studies that used the birth ball during the first and/or second stage of labor as an intervention compared to a control group or usual care that did not include the birth ball use. Types of Birth Balls: Swiss Ball and Peanut Ball. Studies that compared the birth ball to pharmacological methods of pain control were excluded</i>	Result: Results show that the use of birth balls compared with usual hospital care during labor can reduce pain after 20 to 90 minutes by 1.46 and 1.95 points in Visual Analogic Scales, based in a moderated quality of evidence.
(Shirazi, Kohan, Firoozehchian, & Ebrahimi, 2019)	1. <i>Method: Randomized clinical trial.</i> 2. <i>Samples: 178 participants including 89 women in each group. The inclusion criteria included having a tendency for participation, being in 30-32 weeks of gestation, having a normal pregnancy, and having no</i>	Result: Based on the results, birth ball exercises could significantly improve childbirth self-efficacy and pain so that labour pain was lower in this group of women as compared to the other group ($P < 0.001$ in both cervical dilatations). In addition, the score of self-efficacy was higher in the

	<i>history of a disease or obstetric complications based on a standard prenatal chart.</i>	<i>intervention group compared to the control group ($P < 0.001$).</i>
	<p>3. <i>Procedure: The women in the intervention group were asked to join a planned exercise with the birth ball including a 20-minute well-defined exercise three times a week for 6–8 weeks at home whereas those in the control group followed up the routine prenatal cares.</i></p>	
Yeung, May Pui Shan, et al (2019)	<p>1. <i>Method: Prospective multi-centre randomised controlled trial (RCT)</i></p> <p>2. <i>Samples: The target population is Chinese women with an uncomplicated singleton pregnancy at gestational age of 37 to 42 weeks. Participants are randomised based on parity (nulliparous and multiparous) and type of labour onset (spontaneous and induced).</i></p> <p>3. <i>Procedure: Women in the intervention group are actively offered and taught how to use a birth ball; those in the control group receive the usual midwifery care.</i></p>	<p>Result: Intention-to-treat analysis is adopted and performed by researchers masked to subjects' group allocation. A two-sided P value of 0.05 or less is considered statistically significant. The effect of using the birth ball on pain intensity, satisfaction with pain relief and childbirth experience, and sense of control in labour..</p>

The results of the research obtained by the researcher after conducting the literature stage of identification, screening and critical appraisal feasibility test, 6 journals were obtained that had suitability, namely discussing the effect of birth ball exercises therapy on the length of labor in laboring mothers in Stage I. Stage I labor is a period of labor characterized by the discharge of mucus mixed with blood (bloody show) because the cervix begins to open (dilatation) and flatten (effacement). Stage 1 is divided into two parts, namely the latent phase and the active phase. The latent phase is the initial phase of cervical opening when the opening is 1-3 cm. In contrast, the most extensive cervical dilation occurs in the active phase, and the presenting part of the fetus descends further into the pelvis. In

primiparous, women are expected to experience dilation of at least 1 cm / hour and multiparous mothers 1.5 cm / hour (Mu'alimah & Wigati, 2022).

The maternal mortality rate to date (in 2022) has reached 207 per 100,000 KH, which is above the Renstra target of 190 per 100,000 KH (Situbondo Health Office, 2022). Meanwhile, in 2021, the Ministry of Health (Kemenkes) noted that 7,389 mothers in Indonesia died in 2021. This number increased by 59.69% compared to the previous year, which was 4,627 people with the highest cause being Covid-19, namely 2,982 people and as many as 1,320 mothers died from bleeding last year (Andini, 2020).

The first journal (Mu'alimah et al., 2022), research was conducted with the pelvic rocking technique where the technique is a way to accelerate the labor process, namely by moving the pelvis in the direction of rotation during contractions. Swinging and shaking the pelvis forwards and backwards, right and left sides and circling feels more relaxed and makes it easier to open the birth canal during labor (Wulandari & Wahyuni, 2019). In his research, he revealed that there was an effect of using a birthing ball on first-time labor in primigravida. From the treatment group and the control group there is a difference of 2.9 hours. The average control group takes 10.15 hours, while the treatment group takes 7.25 hours. The progress or length of labor as well as the age of first pregnancy and childbirth among mothers is not the same between one mother and another. Almost all respondents in this study were 20-35 years old, but the difference was between the treatment group and the control group in the length of labor in the first stage. One of the labor factors raised in this study is pasase and position. In this section and position, the mother is given treatment by providing therapy using birthing ball to strengthen the abdominal and waist muscles. In addition, it can reduce pressure on the abdomen, reduce pressure on the bladder, help the mother relax to relieve tension which has an impact on reducing the labor pain felt by the mother. The physical movement that is practiced with pelvic rocking is also beneficial to increase the pelvic exit by 30%. This facilitates stretching of the perineum without much pressure and optimizes oxygen flow and blood circulation to the fetus due to the upright sitting position of the birthing mother.

The second journal (Fahlevie et al., 2022) states that Birth Ball can affect the length of the active phase in primigravida due to the application of an upright position combined with movement on the ball. When respondents use the birth ball, respondents not only benefit from an upright position that allows gravity to help lower the fetal head, but also move and increase uterine contractions to be stronger and more efficient to help lower the fetal head and cervical dilatation so that the duration of the active phase is faster. Sitting on a birth ball during labor helps contractions to be more effective as well as bringing the fetus quickly down the pelvis, the pressure of the fetal head on the cervix remains constant when the mother is upright so that the cervix can be dilated more quickly. The pelvic ligament will be more relaxed and the pelvic plane will be wider with the use of birth ball (Aprilia

Yessi, 2020). With the application of this best practice birth ball, it provides a pleasant experience for the mother so that tiring and painful labor can be replaced.

The same results were also obtained in a study conducted by Umi Salamah, Alfi Aulia Putri (2022), pelvic rocking techniques were also used. the relationship between the use of birth balls on the length of the first stage of labor, the highest number of mothers who gave birth normally using birth balls with an average length of labor of 3 - 8 hours as many as 89 mothers gave birth (78.8%), and a small number of mothers who experienced long labor (5.3%). Birth mothers in this study sat on the ball and rocked so that the suppleness and curvature of the ball could stimulate receptors in the pelvis that are responsible for releasing endorphins.

Another advantage of using birthball is that it can increase the opening of the pelvis by 30%, birth ball works in harmony with gravity which pushes the baby down so as to speed up the labor process (Elias et al., 2015).

The fourth journal Alexandre Delgadoa, Tuíra Maiaa, Renato S. Melo, Andrea Lemos (2019) in a systematic review conducted using 7 journals as a study obtained results showing the effectiveness of using birth balls compared to usual care during labor can reduce pain after 20 to 90 minutes by 1.46 and 1.95 points on the Visual Analogue Scale, based on the quality of the moderated evidence (Lowe, 1993).

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The fifth journal of Morvarid Ghasab Shirazi, Shahnaz Kohan, Firoozeh Firoozehchian, Elham Ebrahimi (2019) the procedure carried out in his research was the use of birth ball in pregnant women with a duration of 20 minutes which was carried out 3 times a week within 6-8 weeks. Based on the results of the study, birth ball training can significantly increase self-efficacy so that labor p(Ip, 2005). (Dirgahayu & Rustikayanti, 2022).

ain becomes lower in the group given this treatment compared to the group that is not. This self-efficacy has a mediating effect of 30-40% on labor pain (Lowe NK, 1993).

In addition, the use of birth balls can mobilize the sacroiliac and lumbosacral joints, as well as oblique and transverse muscle tone so as to help pregnant women manage their birth according to good posture (Leung, 2013 and Ip WY, 2005). The use of birth ball can help reduce pain due to contractions, reduce anxiety and shorten the length of the first stage of labor. The use of birth ball can also help laboring mothers to make changes in position that can help mothers to go through the labor process effectively (Dirgahayu & Rustikayanti. 2022).

The same results were also obtained in the sixth journal Yeung, May Pui Shan, et al (2019) which used the method: Prospective

KESIMPULAN

Based on the results of the journal search through the stages of identification, screening, eligibility and including, 6 journals were obtained that explained the effect of birth ball exercises on the progress of opening the labor process in laboring mothers. Where all journals mention that there is an effectiveness of using birth balls in accelerating the length of kala 1. There are many techniques in the use of birth balls, one of which is the pelvic rocking technique which can be used by all groups of women where the technique is done by swinging and shaking the pelvis forward and backward, right and left sides and making it feel more relaxed and facilitating the opening of the birth canal during labor.

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