



BIRTH BALL AGAINST LABOR PAIN

Almyra Nur Azaria¹, Sri Mulyati¹

¹ Midwifery Profession Program, Politeknik Kesehatan Kementerian Kesehatan Bandung
Email: almyranurazaria@gmail.com

Abstract. **Background:** Although childbirth brings much joy to most women, it is usually painful and stressful. These include physiological factors such as mechanical distension, fetal position, maternal position, and contractions, as well as psychological factors such as fear of labor pain and anxiety. Management of labor pain is an essential aspect of obstetric care and a major goal of intrapartum care. Pharmacological terms are more expensive, and maybe have the potential to cause adverse effects. Non-pharmacological methods of labor pain relief are frequently applicable and cheap. This study aims to determine the effect of birth ball on pain during labor.

Methods: This review article is a literature study from two articles from PubMed and Cochrane Library as electronic databases. The articles is limited to those published in the last 5 years and full text articles. The article were identified using the following search strategy: “birthing ball” and “labor pain” from the inception of each database.

Results: Based on the results of the studies birth ball exercise could be an effective tool for parturient women to reduce labor pain.

Keywords: birth ball, labor pain.

Background

Multiple factors affect a woman's sensation of pain during labor. These include physiological factors and psychological factors. Management of labor pain is an essential aspect of obstetric care and a major goal of intrapartum care.¹ The administration of drugs might not only cause side effects but also can disturb a mother's active cooperation during labor. In pharmacological terms, the pain feeling would be reduced physiologically, but the psychological and emotional conditions of the mother are ignored. Non-pharmaceutical methods of labor pain relief are frequently applicable and cheap, and can be used as a successor or supplementary treatment with other drugs.²

Non-pharmacological methods include massage, reflexology, touch therapy, relaxation, dancing, heat and cold therapy. Some believe these techniques had been very effective on

pain relief. One of the non-pharmacological methods of labor pain relief is the use of a birth ball.² Birthing balls are round exercise balls upon which a woman sits during labor and performs different movements such as rocking back and forth and pelvic rotation. The suggested benefits of using the birth ball during labor include reduced pain, reduction of anxiety level, less use of pethidine, easier fetal head descent and rotation, shorter duration of the first stage of labor and enhanced maternal satisfaction and wellbeing. Psychologically, exercising with the ball improves posture, balance, coordination, and body awareness as a result of its dynamic nature, helping the mother maintain control of her body and build body confidence.^{1,2}

Method

This article is a literature study from five articles from PubMed and Cochrane Library as electronic databases. The articles is limited to

those published in the last 5 years.and full text articles. The article were identified using the following search strategy: “birthing ball” and “labor pain” from the inception of each database.

Results

Table 1. Article Characteristic

Author	Title	Journal and Sample Characteristic	Result
Jessica M, Grenvik et al., 2021	Birthing Ball for Reducing Labor Pain: A Systematic Review and Meta-Analysis of Randomized Controlled Trials	Seven trials with 533 pregnant women were included. 287 (53.8%) were randomized to the intervention group (birthing ball) and 246 (46.2%) were randomized to the control group (no birthing ball). All analyses were done using an intention-to-treat approach, evaluating women according to the treatment group to which they were randomly allocated in the original trials. The primary outcome was labor pain in the first stage of labor. The summary measures were reported as summary relative risk (RR) or as summary mean difference (MD) with 95% of confidence interval (CI) using the random-effects model of DerSimonian and Laird.	Labor pain significantly decreased by 1.70 points in the birthing ball group compared to the control group (MD 1.70 points; 95% CI 2.20 to 1.20)
Somayeh Makvandi, Robab Roudsari et al., 2016	Effect of Birth Ball on Labor Pain Relief: A systematic Review and Meta-Analysis.	The search resulted in 341 titles and abstracts, which were narrowed down to eight potentially relevant articles. Of these, four studies met the inclusion criteria. Pain intensity on a 10 cm visual analogue scale was used as the main outcome measure. Risk of bias was assessed using the Cochrane Risk of Bias tool. Comprehensive Meta-Analysis Version 2 was used for statistical analysis.	The meta-analysis showed that birth ball exercises provided statistically significant improvements to labor pain (pooledmean difference -0.921; 95%confidence interval -1.28, -0.56; P= 0.0000005; I2=33.7%).

Alexandre Delgado, Tuíra Maia et al. 2019	Birth ball use for women in labor: A systematic review and meta-analysis	Seven studies were included. This research was made using MEDLINE/PubMed, LILCAS, CINAHL, CENTRAL, and SCOPUS databases, with no period or language restrictions. The terms "labor" and "birth ball" were used. Clinical trials (randomized and non-randomized) were included when compared a group with parturients using birth ball with control group under usual care. The studies involving pregnant women independent of parity, between 37 and 42 weeks' gestation, with vertex or breech presentation, alive fetus and singleton pregnancy were included.	The pain outcome showed differences in the subgroups of 20/30 minutes on the birth ball (mean difference) -1,46; 95% Confidence Interval: -2,15 to -0,76, $p < 0.0001$), 60 minutes (mean difference -1,95; 95% Confidence Interval: -2,68 to -1,22; $p < 0.00001$) and 90 minutes (mean difference -1,72; 95% Confidence Interval: -2,44 to -1,00; $p < 0.0001$
Wenny Indah Purnama Eka Sari	The Effect Of Pregnancy Exercise Use Of Birth Ball On Pain Perceptions and Self Efficacy On Primigravida During Labor	This study aims to analyze the effect exercise pregnancy use birth ball to pain perceptions and self efficacy on primigravida during labor. The research method use Quasi Experiment with pretest-posttest control grup design, with the sample of 34 respondent. Sampling technique were counsecutive sampling divided by random permuted blocks. Pain perceptions assessment using VAS and self efficacy assessment using questionnaire adapted from CBSEI. The statistical test using Mann-Whitney tests and chi square test.	The research showed that there is effect exercise use of birth ball on pain perceptions ($p=0,004$), and self efficacy ($p=0,000$). The Conclusion of this study is implementation of exercise pregnancy use birth ball effective to reduce pain perceptions and improve childbirth efficacy among women in labor. Pregnant women have high self efficacy, they have lower pain perceptions.
Rahmi Mutia Ulfa	Effect of the Use of Birth Balls on the Reduction of Pain and Duration of Labor During the First Stage of	The sample consisted of 13 treatment people and 13 controls with the Consecutive Sampling technique. The pain scale was measured by the Faces Pain Rating Scale and	There was a difference in the effect of using a birth ball on the reduction of pain in the first stage of the active

	Active and Second Stage of Labor in Primigravida Maternity	the duration of the active phase I and the second stage of labor using a partograph. The difference in pain scores and duration of stage I and duration of II for the treatment and control groups were tested with T-independents if the data were normally distributed and the Mann-Whitney test if the distribution was not normal.	phase in primigravida with p value = 0,000 and there was also a difference in the effect of using a birth ball on the duration of labor during the active phase in the treatment and control groups with p = 0,000, while for the duration of labor during the second stage of labor, there was no difference in the effect of using a birth ball with p = 0.160. The use of birth balls is proven to reduce labor pain during the active phase and accelerate the duration of the I stage.
--	--	--	---

There are some potential mechanisms to explain why using a birth ball might reduce labor pain. The first endogenous mechanism is gate control theory, which consists of applying non-painful massages to painful areas. This mechanism acts mainly on the sensory discriminative component of pain, by blocking part of the nociceptive message in the spine.³ Based on this theory, the birth ball may provide support for the perineum without applying significant pressure. Moreover, some studies indicated that freedom of movement and upright positions, including sitting in a rocking chair, on a birth ball or on the toilet during labor assisted the natural force of gravity to facilitate and enhance fetal descent, improving the quality and effectiveness of labor contractions and decreasing labor pain.⁴ The decrease in lumbar pain that occurs in sitting positions might be attributed to decreased pressure on the nerve filaments that lie over the iliosacral joint and its immediate surrounding area.

In addition, the decrease in labor pain that occurs with birth ball exercises might be attributed to distraction from pain. Distraction includes providing laboring women with specific activities so that conscious thoughts and anxieties are reduced.⁴

Conclusion

The benefits of using the birth ball during labor include reduced pain, reduction of anxiety level, less use of pethidine, easier fetal head descent and rotation, shorter duration of the first stage of labor and enhanced maternal satisfaction and wellbeing. Psychologically, exercising with the ball improves posture, balance, coordination, and body awareness as a result of its dynamic nature, helping the mother maintain control of her body and build body confidence.⁴

References

1. Vivo V, De Prisco Lcp A, Delgado García BE, Berghella V. Birthing ball for reducing labor pain: a systematic review and meta-analysis of randomized controlled trials. *J Matern Fetal Neonatal Med*. 2021
2. Makvandi S, Latifnejad Roudsari R, Sadeghi R, Karimi L. Effect of birth ball on labor pain relief: A systematic review and meta-analysis. *J Obstet Gynaecol Res*. 2016
3. Tian S-H, Kao C-H, Lin K-C, Chang C-Y, Gau M-L. Effects of birth ball exercises on labor

pain and childbirth satisfaction. JNHR 2013;
9: 13–22. 2014

4. Yeung, M.P.S., Tsang, K.W.K., Yip, B.H.K. *et al.* Birth ball for pregnant women in labour research protocol: a multi-centre randomised controlled trial. *BMC Pregnancy Childbirth* 19, 153. 2019
5. Alexandre Delgado, Tuíra Maia, Renato S. Melo, Andrea Lemos, Birth ball use for women in labor: A systematic review and meta-analysis, *Complementary Therapies in Clinical Practice*. 2019
6. Sari W. The Effect Of Pregnancy Exercise Use Of Birth Ball On Pain Perceptions and Self Efficacy On Primigravida During Labor. *Jurnal Ilmiah Bidan*. 2019
7. Ulfa, R.M. Effect of the Use of Birth Balls on the Reduction of Pain and Duration of Labor During the First Stage of Active and Second Stage of Labor in Primigravida Maternity. *Science Midwifery*.