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Effectiveness of Gym Ball Exercises Combined with the Back-and-Forth Child's Pose in Reducing Low Back Pain Among Third-Trimester Pregnant Women

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Abstract: Back pain is one of the most common complaints experienced by pregnant women, particularly during the third trimester, as a result of physiological changes and the increased mechanical load on the spine. One non-pharmacological intervention that may help alleviate this condition is exercise using a gym ball combined with the Back-and-Forth Child's Pose technique. This study aimed to determine the effect of gym ball exercises using the Back-and-Forth Child's Pose method on reducing back pain among women in the third trimester of pregnancy. The study employed a pre-experimental design with a one-group pretest–posttest approach. Participants received the intervention in the form of Back-and-Forth Child's Pose exercises using a gym ball twice daily for 10–15 minutes over a period of one week. Back pain intensity was measured before the intervention and again on the seventh day after the intervention using a standardized pain scale. The sample consisted of 15 third-trimester pregnant women who reported experiencing back pain. The results showed that before the intervention, 12 respondents (80%) experienced moderate pain and 3 respondents (20%) experienced mild pain. After the intervention, 10 respondents (66.6%) experienced mild pain, 3 respondents (20%) reported no pain, and only 2 respondents (13.4%) continued to experience moderate pain. Furthermore, the mean pain score decreased from 3.00 before the intervention to 1.96 after the intervention. Statistical analysis using the Wilcoxon Signed-Rank Test yielded a p-value of 0.000 ($p < 0.05$), indicating that gym ball exercises using the Back-and-Forth Child's Pose method had a statistically significant effect on reducing back pain among women in the third trimester of pregnancy.

Keywords: Back pain level; Gymball movement back and forth child's Pose method; Pregnant women in the third trimester.

Introduction

Pregnancy begins with the fertilization or union of a spermatozoon and an ovum, followed by nidation or implantation in the uterine wall. When calculated from the time of fertilization to the birth of the baby, a normal pregnancy lasts approximately 40 weeks, or about 9 to 10 months according to the international calendar. Pregnancy is divided into three trimesters (Ningsih, 2020). During the third trimester, pregnant women experience various physiological changes, including gradual alterations in body shape, posture, and gait. Enlargement of the abdomen causes the pelvis to tilt forward, reduces abdominal muscle tone, and increases the mechanical load on the body. These changes may lead to pain and weakness in the upper and lower extremities. In addition, the ligaments and muscles of the lower back and pelvic region may be subjected to

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considerable stress. These physiological adaptations, together with other changes, often result in musculoskeletal discomfort, particularly among older pregnant women (Kusumawati & Jayanti, 2018).

High prevalence rates of low back pain during pregnancy have been reported in various regions of the world, including Europe, North America, Australia, China, rural mountainous areas of Taiwan, and Africa, as well as among upper-class women in Nigeria. Previous studies have shown that the prevalence of pregnancy-related low back pain in Australia ranges from approximately 35% to 80% (Ningsih, 2020).

The prevalence of low back pain among pregnant women has been reported to exceed 50% in several countries, including the United States, Canada, Iceland, South Korea, and Turkey. In non-Scandinavian regions, such as North America and Africa, the prevalence is reported to range from 21% to 89.9% (Wijayanti, 2020). Approximately 47% to 60% of women experience low back pain during the fifth to seventh months of pregnancy. This pain is often more pronounced in the evening and tends to increase as pregnancy progresses, particularly during the third trimester. The prevalence of lower abdominal and low back pain has been reported to be 16.7% in the first trimester, 31.3% in the second trimester, and 53% in the third trimester (Safitri, 2021). In Indonesia, the prevalence of low back pain among pregnant women in various regions ranges from 60% to 80%. National data indicate that the incidence of low back pain during pregnancy reaches approximately 68% (Qibtiyah, 2021).

There are several pharmacological and non-pharmacological methods available to manage low back pain during pregnancy. Pharmacological therapies commonly include non-steroidal anti-inflammatory drugs (NSAIDs) and analgesics. However, because the use of medications during pregnancy may be limited due to safety considerations, non-pharmacological therapies are often recommended as safer and more practical alternatives. Simple non-pharmacological interventions that can be provided to pregnant women to help reduce low back pain include hypnosis, acupressure, yoga, therapeutic touch, aromatherapy, relaxation techniques, listening to music, warm compresses, cold compresses, and the use of a gym ball (Supriatiningsih et al., 2019).

The use of a gym ball during pregnancy can stimulate postural reflexes and help maintain the strength of the muscles that support the spine. One common gym ball exercise involves sitting on the ball while performing gentle pelvic rocking movements. This exercise is believed to provide comfort and reduce lower back pain through the gate control mechanism, which modulates pain signals before they reach the cerebral cortex, thereby decreasing the perception of pain. Gym ball exercises can also help address weakness and instability in the pelvic and lumbopelvic regions, which are often associated with chronic musculoskeletal discomfort during pregnancy. Regular practice strengthens key trunk stabilizing muscles, including the multifidus, erector spinae, and abdominal muscles such as the transversus abdominis, rectus abdominis, and internal and external obliques. In addition, gym ball exercises help reduce muscular imbalances, thereby improving movement efficiency and overall functional stability. As a result, these exercises represent an effective non-pharmacological intervention for alleviating lower back pain and enhancing physical comfort in pregnant women (Mutoharoh et al., 2019).

A study conducted by Ni'amah and Sulistiyaningsih (2020) examined the effect of Child's Pose movements on reducing pain intensity among pregnant women. The results of the normality test indicated that all data were normally distributed. Specifically, the pretest pain scores in the intervention group yielded a significance value of $p = 0.200$ ($p > 0.05$), while the posttest scores showed $p = 0.086$ ($p > 0.05$). In the control group, both the pretest and posttest pain scores produced significance values of $p = 0.200$ ($p > 0.05$). Based on the Independent Samples t-test, the study obtained a significance value of $p = 0.0001$ ($p < 0.05$), indicating a statistically significant difference between the intervention and control groups. These findings demonstrate that the Child's Pose and Animal Pose movement interventions were significantly more effective in reducing pain compared with the control condition.

Low back pain in pregnant women, if not properly managed, can negatively affect maternal quality of life and increase discomfort as childbirth approaches. Therefore, safe and effective interventions are needed to help alleviate this condition. Non-pharmacological management is considered a suitable option during pregnancy because it minimizes the risk of adverse effects for both the mother and the fetus. One non-pharmacological method that can be applied is exercise using a gym ball combined with the Back and Forth Child's Pose technique. This method integrates stretching and relaxation movements that may help improve body posture, reduce tension in the lower back muscles, enhance pelvic flexibility, and promote a sense of relaxation in pregnant women. In addition to its therapeutic benefits, this intervention is easy to perform, relatively safe, cost-effective, and can be practiced independently at home. As such, the use of a gym ball with the Back and Forth Child's Pose method represents a practical and promising approach for reducing low back pain during pregnancy.

The study conducted by Ni'amah and Sulistiyaningsih (2024), entitled *Designing a Gym Ball*

Movement Model with the Back-and-Forth Child's Pose Method to Reduce Back Pain in Third-Trimester Pregnant Women, demonstrated that the developed intervention was both feasible and effective in reducing low back pain during pregnancy. The researchers employed a Research and Development (R&D) approach using the ADDIE development model, which consists of the Analysis, Design, Development, Implementation, and Evaluation stages. The gym ball movement model combined with the Back-and-Forth Child's Pose method was systematically developed and evaluated by expert validators. Based on the assessment of yoga practitioners and gym ball experts, the model obtained an average feasibility score of 3.9, which was categorized as "very feasible" for implementation. Furthermore, observational data indicated that the developed exercise model was effective in reducing the intensity of back pain among third-trimester pregnant women. Specifically, participants experienced a decrease in pain levels from moderate pain to mild pain after performing the intervention. These findings suggest that the gym ball exercise combined with the Back-and-Forth Child's Pose method is a practical and effective non-pharmacological approach for managing low back pain during late pregnancy.

A preliminary study conducted by Siti Ni'amah in Tondomulyo Village during October–November 2023 identified 30 women in their third trimester of pregnancy. Subsequently, the researcher conducted in-depth interviews with 10 pregnant women to explore the prevalence and characteristics of low back pain. The results revealed that 3 women (30%) did not experience back pain, whereas 7 women (70%) reported experiencing low back pain.

Among the seven pregnant women who experienced low back pain, three women (42.9%) reported mild pain. This type of pain occurred only at certain times, particularly during daily activities, and subsided with rest or sleep. Another three women (42.9%) experienced moderate pain characterized by persistent discomfort that interfered with daily activities and was relieved only through sleep or medication. One woman (14.2%) reported severe pain, which was continuous throughout the day, significantly disrupted sleep, and caused frequent awakenings at night. The occurrence of severe pain in this respondent was associated with excess body weight and physically demanding work as a factory laborer.

To manage their back pain, the pregnant women used various strategies, including taking medication, receiving gentle massage, applying warm or cold compresses, reducing physical activity, and increasing rest. However, none of the respondents had used gym ball exercises as a non-pharmacological intervention to alleviate low back pain. These findings indicate that although low back pain is common among third-trimester pregnant women, the use of gym ball exercises remains underutilized and has considerable potential as an effective and accessible intervention.

Method

This research is a type of Pre-experimental design research with a one group pretest posttest design. The population in this study consists of 15 third-trimester pregnant women. The sample was taken using the total sampling technique. The instrument in this study is a questionnaire on pain measurement using the VAS (Visual Analog Scale). Data collection was obtained directly from respondents by filling out the questionnaire. Validity testing was calculated using the product moment formula and reliability testing used the Cronbach Alpha formula. Data processing includes editing, coding, scoring, and data tabulation. Meanwhile, data analysis includes univariate and bivariate tests. Data normality testing was conducted using the Shapiro-Wilk test, with the results showing normally distributed data, and statistical testing was conducted using the Wilcoxon test (Sugiyono, 2019). The Research design is as follows:

Table 1. Research Design

Pretest	Intervention	Posttest
Q-1	X	Q-2

Explanation:
Q_1 = Initial measurement (pretest) of back pain level in pregnant women in the third trimester before the intervention is given.
X = Gymball intervention using the Back-and-Forth Child's Pose (BF-Chipose) method.
Q_2 = Final measurement (posttest) of back pain level after the intervention is given.

The research flow was designed to systematically examine the effect of GymBall Exercises and Back-and-Forth Child's Pose on reducing low back pain among third-trimester pregnant women. The study involved 15 pregnant women as participants. Low back pain intensity was measured before and after the intervention using the Visual Analog Scale (VAS). The collected data were processed through editing, coding, scoring, and tabulation, and analyzed using univariate and bivariate statistics, the Shapiro–Wilk normality test, and the Wilcoxon Signed-Rank Test to determine the significance of changes in pain intensity. The overall research procedure is presented in Figure 1.

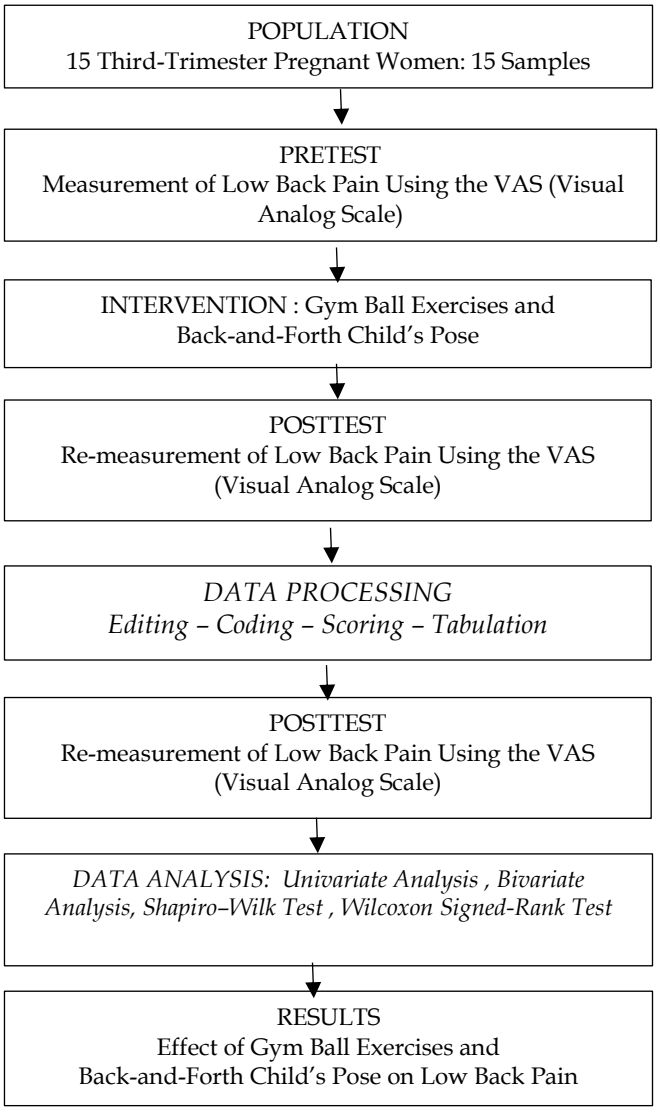

Figure 1. Research flow chart

Result and Discussion

Result

Before presenting the distribution of low back pain intensity, an initial assessment was conducted to determine the baseline condition of all participants prior to the intervention. The intensity of low back pain experienced by third-trimester pregnant women was measured using the Visual Analog Scale (VAS), which categorizes pain into five levels: no pain, mild pain, moderate pain, severe pain, and very severe pain. This pretest measurement was intended to identify the participants' initial pain status and to provide a reference point for evaluating the effectiveness of GymBall Exercises and Back-and-Forth Child's Pose in reducing low back pain. The results of the baseline assessment are presented in Table 2.

Table 2. Back pain level before intervention

Category	Amount	Percentage (%)
0 : No painful	0	0%
1- 3 : pain light	3	20%
4- 6 : pain currently	12	80%
7- 9 : pain heavy	0	0%
10 : very severe pain	0	0%
Total	15	100%

Table 2 shows the distribution of low back pain intensity among third-trimester pregnant women before the intervention. Based on the Visual Analog Scale (VAS), most participants (12 individuals; 80%) experienced moderate pain (scores 4–6), while 3 participants (20%) reported mild pain (scores 1–3). No participants reported no pain, severe pain, or very severe pain. These findings indicate that all respondents experienced some degree of low back pain prior to the intervention, with moderate pain being the most common category.

Following the intervention, a posttest assessment was conducted to evaluate changes in the intensity of low back pain among third-trimester pregnant women. The level of pain was re-measured using the Visual Analog Scale (VAS), which classifies pain into five categories: no pain, mild pain, moderate pain, severe pain, and very severe pain. This posttest measurement was intended to determine the effectiveness of GymBall Exercises and Back-and-Forth Child's Pose in reducing low back pain after the treatment period. The distribution of posttest pain intensity is presented in Table 3.

Table 3. Back pain level after intervention

Category	Amount	Percentage (%)
0 : No painful	3	20%
1- 3 : pain light	10	66.6%
4- 6 : pain currently	2	13.4%
7- 9 : pain heavy	0	0%
10 : very severe pain	0	0%
Total	15	100%

The posttest results demonstrate a substantial reduction in low back pain intensity after the intervention. Most participants (10 individuals; 66.6%) reported mild pain (VAS score 1–3), while 3 participants (20%) experienced no pain at all. Only 2 participants (13.4%) remained in the moderate pain category (VAS score 4–6), and no participants reported severe or very severe pain. Compared with the pretest findings, in which 80% of participants experienced moderate pain, these results indicate a clear shift toward lower pain categories. Therefore, GymBall Exercises and Back-and-Forth Child's Pose were effective in reducing low back pain among third-trimester pregnant women.

To obtain an overall description of the change in low back pain intensity, the pretest and posttest scores were analyzed using descriptive statistics. The analysis focused on the mean scores of pain intensity measured with the Visual Analog Scale (VAS) before and after the implementation of GymBall Exercises and Back-and-Forth Child's Pose. The mean values provide a general indication of whether the intervention contributed to a reduction in pain among third-trimester pregnant women. The descriptive results are presented in Table 4.

Table 4. Average Level of Back Pain before and after doing gymball

Variables	N	Mean
Before done gym ball	15	3.00
After done gym ball	15	1.96

Average level painful back Mother third trimester of pregnancy before and after done gymball with gymball with *the back and forth Child's Pose* method is 3.00 with respondents as many as 15 people, and the average level painful back Mother third trimester of pregnancy after done gymba l with *the back and forth method Child's Pose* is 1.96 with amount 15 respondents, with This show There is decline level painful back Mother third trimester of pregnancy after done gymba l with *the back and forth Child's Pose* method.

Prior to testing the effectiveness of the intervention, a normality test was conducted to determine whether the pretest and posttest data were normally distributed. The Shapiro–Wilk test was used because the sample size consisted of fewer than 50 participants. This test is commonly applied in small-sample studies to assess the assumption of normality, which is essential for selecting the appropriate statistical procedure. The results of the normality test for low back pain scores before and after the GymBall Exercises intervention are presented in Table 5.

Table 5. Data Normality Test

	Shapiro-Wilk		
	Statisti	df	Sig.
Before done with a gym ball	.688	15	.000
After done gym ball	.636	15	.000

The normality test of the data obtained *p-value* 0.000 <α (0.05) which means that the data is distributed not normal then analysis bivariate using the Wilcoxon test. Because the normality test showed that the pretest and posttest data were not normally distributed, the Wilcoxon Signed-Rank Test was used to determine whether there was a statistically significant difference in low back pain intensity before and after the intervention. This non-parametric test is appropriate for comparing two related measurements obtained from the same participants. The analysis was conducted to evaluate the effectiveness of GymBall Exercises and Back-and-Forth Child's Pose in reducing low back pain among third-trimester pregnant women. The results of the Wilcoxon Signed-Rank Test are presented in Table 6.

Table 6. Differences in back pain in pregnant women in the third trimester before and after being given a gymball.

		N	Mean Rank	P_Value
Before and After Being Given Gymbal	Negative Rank	15	12.50	0.000
	Positives Rank	0	0.00	
	Ties	0		
	Total	15		

Differences in Back Pain in Pregnant Women in the Third Trimester Before and After Being given gymballs with *the back-and-forth Child's Pose* method, negatives Rank is worth 12.50, thing This show that There is decline level painful back Mother pregnant after done massage gymbal. Positives Rank is 0, this indicates there are 0 mothers' pregnant women who experience improvement level painful back after gymbal is done. The Ties value is 0, This show that No There is Mother pregnant at the level painful his back the same before and after doing gymbal.

The results of the Wilcoxon statistical test were obtained p_value (0.000) < (0.05) then H0 is rejected and Ha is accepted which means There is Differences in Back Pain in Pregnant Women in the Third Trimester Before and After Being Given Gymbal with *the Back and Forth Child's Pose* (BF_Chipose) method, which means gym ball with *the back and forth Child's Pose* (BF_Chipose) method has an effect to decline painful back Mother third trimester of pregnancy.

Discussion

1. Back pain level Mother third trimester of pregnancy before done gym ball with *the back-and-forth Child's Pose* (BF_Chipose) method

Based on the results of the study, the distribution of respondents according to their level of back pain before receiving the gym ball intervention showed that 3 pregnant women (20%) experienced mild pain, while 12 pregnant women (80%) experienced moderate pain, indicating that most third-trimester pregnant women in the study experienced a considerable degree of discomfort prior to treatment. The Gym Ball Back and Forth Child's Pose method (BF-ChiPose) is a stretching exercise that uses a gym ball (exercise ball or fitball) and incorporates a modified Child's Pose movement derived from yoga. In this method, pregnant women assume a

position similar to the traditional Child's Pose, with the knees apart, the body leaning forward, and both hands resting on the gym ball, which is then moved gently in a back-and-forth motion. This exercise is designed to reduce lower back pain during the third trimester of pregnancy by improving flexibility, decreasing muscle tension, enhancing postural alignment, and promoting relaxation. According to Carolyn Kisner and Lynn Allen Colby (2017), therapeutic stretching exercises are effective in reducing musculoskeletal pain by increasing muscle flexibility, restoring joint mobility, and improving overall functional movement..

Common discomforts experienced by pregnant women during the third trimester include frequent urination, shortness of breath, low back pain, constipation, insomnia, increased anxiety, perineal discomfort, calf muscle cramps, varicose veins, ankle edema, fatigue, Braxton Hicks contractions, mood changes, increased weight gain, a higher fundal height, and progressive abdominal enlargement (Pudji, as cited in Beti Nurhayati et al., 2019). Among these complaints, low back pain is one of the most frequently reported and clinically significant discomforts during late pregnancy. This finding is supported by a study conducted by Tajmiati, Mardiani, and Wulandara (2021) in Tasikmalaya involving 35 pregnant women, which found that low back pain was the most common discomfort experienced during the third trimester, with a prevalence of 74.3%.

A study conducted by Sulisttiyaningsih (2024) investigated the effect of gym ball exercises on reducing low back pain among women in the third trimester of pregnancy. The study employed a quantitative approach using a quasi-experimental design with a pretest–posttest format. Participants were selected through purposive sampling, resulting in 28 eligible samples from a total population of 30 pregnant women. Data were analyzed using both univariate and bivariate statistical techniques, with the Paired Sample t-test, Independent Sample t-test, and Wilcoxon test used to assess changes in pain levels. The results showed that before the intervention, the majority of participants experienced moderate pain, with 19 respondents (67.9%) and a mean pain score of 2.03. After participating in gym ball exercises, 15 respondents (53.6%) reported no pain, and the mean pain score decreased to 0.64. The Wilcoxon test produced a p-value of 0.000 ($p < 0.05$), indicating a statistically significant difference in low back pain levels before and after the intervention at UPTD Puskesmas Tanjungrejo Jekulo Kudus. These findings demonstrate that gym ball exercises are effective in reducing low back pain in third-trimester pregnant women and may be recommended as a complementary therapy to help manage pregnancy-related discomfort.

Based on the results of the study and supporting theoretical perspectives, the researcher concluded that most respondents experienced moderate low back pain before receiving the gym ball intervention using the Back-and-Forth Child's Pose (BF-ChiPose) method. Specifically, 3 respondents (20%) reported mild pain, while 12 respondents (80%) reported moderate pain. This finding suggests that low back pain was a common complaint among the third-trimester pregnant women included in the study.

This condition can be attributed to several physiological and anatomical changes that commonly occur during pregnancy. These include physical discomfort resulting from the increasing size and changing position of the fetus, more frequent urination, progressive maternal weight gain, increased uterine fundal height, and enlargement of the abdomen. Collectively, these changes alter posture, increase mechanical stress on the lumbar region, and contribute to muscle tension and instability in the lower back. As a result, these factors are believed to play a significant role in the development and persistence of low back pain among pregnant women.

2. Back pain level Mother third trimester of pregnancy after done gymbal with *back-and-forth Child's Pose method* (BF_Chipose)

Based on the results of the study, after the administration of the gym ball intervention using the Back-and-Forth Child's Pose (BF-ChiPose) method, changes in pain intensity were observed in all respondents. Specifically, 3 respondents (20%) reported no pain, 10 respondents (66.6%) experienced mild pain, and only 2 respondents (13.4%) continued to experience moderate pain. These findings indicate that the intervention was effective in reducing the severity of low back pain among pregnant women in the third trimester.

Pain intensity refers to the degree of severity of pain perceived by an individual. Because pain is a subjective experience, each person may respond differently depending on their physical condition, pain tolerance, and psychological state. Pain can be assessed both subjectively, through self-reported pain scales, and objectively, by observing physiological responses to painful stimuli (Heidi Murkoff et al., 2019). During pregnancy, low back pain is generally considered a physiological condition resulting from anatomical and hormonal changes in the maternal body. Such pain is regarded as within normal limits when it subsides after adequate rest and does not significantly interfere with daily activities (Purnamasari & Widyawati, 2019).

A study conducted by Wijayanti (2020), entitled *The Effect of Child's Pose Movement on Reducing Pain Intensity*, demonstrated that Child's Pose and Animal Pose

interventions were effective in reducing pain levels among pregnant women. The results of the normality test showed that all pain score data were normally distributed. Specifically, the pretest pain scores in the intervention group yielded a significance value of p = 0.200 (p > 0.05), while the posttest scores produced a significance value of p = 0.086 (p > 0.05). In the control group, both pretest and posttest pain scores showed significance values of p = 0.200 (p > 0.05), indicating that all four datasets met the assumption of normality.

Further analysis using the Independent Samples t-test revealed a significance value of p = 0.0001 (p < 0.05), indicating a statistically significant difference between the intervention and control groups. These findings suggest that the Child's Pose and Animal Pose movement interventions were significantly more effective in reducing pain intensity compared with the control condition. The study provides empirical support for the use of stretching and relaxation exercises as effective non-pharmacological approaches to alleviate low back pain during pregnancy..

Based on the results of the study and supporting theoretical perspectives, the researcher concluded that most respondents experienced a reduction in low back pain after performing gym ball exercises using the Back-and-Forth Child's Pose (BF-ChiPose) method. Specifically, 3 respondents (20%) reported no pain, 10 respondents (66.6%) experienced mild pain, and only 2 respondents (13.4%) continued to report moderate pain. These findings indicate that the BF-ChiPose intervention was effective in decreasing the intensity of low back pain among pregnant women in the third trimester.

The reduction in pain intensity may be attributed to several contributing factors. In addition to the therapeutic effects of the gym ball exercises, some participants may have adopted healthy lifestyle practices that supported pain relief, such as maintaining a balanced diet, engaging in regular but non-strenuous physical activity, adjusting sleeping positions, taking warm baths, and practicing proper sitting and standing postures. These behaviors can help reduce muscle tension, improve circulation, and enhance musculoskeletal comfort, thereby contributing to a decrease in low back pain during the third trimester of pregnancy.

3. Difference level painful back Mother third trimester of pregnancy after and before done gym ball with *the back-and-forth Child's Pose method* (BF_Chipose

The results of the study showed that the mean level of low back pain among third-trimester pregnant women before participating in gym ball exercises using the Back-and-Forth Child's Pose (BF-ChiPose) method was 3.00, indicating a moderate level of pain, whereas after the intervention the mean pain score decreased to 1.96, reflecting a reduction in pain intensity to the mild category. Statistical analysis using the Wilcoxon Signed-Rank Test revealed a p-value (ρ-value) of 0.000, which was lower than the significance level of 0.05 (p < 0.05), indicating a statistically significant difference in low back pain levels before and after the implementation of the gym ball intervention with the Back-and-Forth Child's Pose (BF-ChiPose) method among third-trimester pregnant women in Tondomulyo Village. These findings demonstrate that the BF-ChiPose method is effective in reducing low back pain and improving physical comfort in women during the third trimester of pregnancy.

Low back pain (LBP) is pain that occurs in the lumbosacral region of the spine. In pregnant women, the intensity of low back pain generally increases as gestational age advances. This condition occurs as a result of a shift in the body's center of gravity and changes in maternal posture caused by the increasing weight of the enlarging uterus. These biomechanical changes place additional stress on the lumbar spine and surrounding muscles, thereby contributing to discomfort in the lower back. Low back pain during pregnancy may also be triggered or aggravated by excessive bending, prolonged walking without adequate rest, and lifting heavy objects, particularly when the mother is already experiencing fatigue. Improper body mechanics during daily activities can lead to muscle strain and further intensify pain in the lumbosacral area. Therefore, the application of proper body mechanics, especially when lifting objects, is essential to prevent muscle overstretching and reduce the risk of worsening low back pain during pregnancy (Lina Fitriani, 2018).

Child's Pose, also known as Balasana, is one of the most beneficial and frequently practiced yoga postures, commonly performed at the end of a yoga session or after strenuous physical activity. This pose is widely recognized for its positive effects on both physical and mental well-being. Practicing Child's Pose with a gentle back-and-forth movement can provide a deep sense of comfort and relaxation while helping to reduce tension in the lower back and shoulders. Unlike exercises intended to strengthen muscles, Child's Pose primarily focuses on stretching and relaxation, promoting flexibility and relieving musculoskeletal discomfort. The posture encourages the body to rest in a supported position, which produces a calming and soothing effect, making it particularly suitable for pregnant women experiencing low back pain (Amalia, 2015).

A study conducted by Siti Ni'amah and Sri Hadi Sulistiyaningsih (2024), entitled *Designing a Gym Ball Movement Model with the Back-and-Forth Child's Pose (BF-ChiPose) Method to Reduce Back Pain in Third-Trimester Pregnant Women*, demonstrated that the developed

intervention was both feasible and effective in reducing low back pain during pregnancy. The researchers employed a Research and Development (R&D) approach using the ADDIE model, which consists of five stages: Analysis (needs assessment), Design, Development (including expert validation and product revision), Implementation (application of the gym ball movement model), and Evaluation (assessment of the feasibility and quality of the developed product). The BF-ChiPose model was developed based on expert evaluations, and assessments conducted by yoga practitioners and gym ball specialists yielded an average score of 3.9, which was categorized as "very feasible" for use. Furthermore, observational results indicated that the gym ball movement model combined with the Back-and-Forth Child's Pose method was effective in reducing back pain among third-trimester pregnant women, with pain levels decreasing from moderate to mild intensity. These findings provide strong empirical support for the use of BF-ChiPose as a safe, practical, and effective non-pharmacological intervention for managing low back pain during late pregnancy.

A study conducted by Dwi Canika et al. (2023) on the effect of gym ball exercise in reducing pain intensity among women in the third trimester of pregnancy demonstrated significant improvements following the intervention. Before the intervention, 26 respondents (78.8%) experienced moderate pain. After participating in the exercise program, 28 respondents (84.8%) reported only mild pain, with most participants performing pelvic rocking exercises using a birthing ball for 11–15 minutes. Statistical analysis revealed a significance value of $\rho = 0.000$ ($p \leq 0.05$), indicating a statistically significant effect of pelvic rocking using a birthing ball on reducing low back pain in third-trimester pregnant women.

Similarly, a study conducted by Ni Made Pertiwi (2023) also found a significant effect of gym ball exercise on reducing pain intensity in pregnant women during the third trimester. The study reported a p-value of 0.000, which was lower than the significance level of $\alpha = 0.05$, confirming a statistically significant difference in pain levels before and after the intervention. Together, these findings provide strong empirical evidence that gym ball exercises are an effective non-pharmacological intervention for alleviating low back pain and improving comfort among pregnant women in late pregnancy.

Based on the results of the study and supporting theoretical perspectives, the researcher concludes that the use of a gym ball combined with the Back-and-Forth Child's Pose (BF-ChiPose) method has a significant effect on reducing low back pain among pregnant women in the third trimester. The findings demonstrate that this intervention effectively decreases pain intensity and improves maternal comfort during late pregnancy.

The BF-ChiPose method incorporates gentle stretching, pelvic rocking, and relaxation movements that help improve blood circulation, provide warmth and mild pressure to the abdominal and lower back muscles, enhance physical relaxation, and reduce muscular tension. These physiological effects contribute to better postural alignment, increased flexibility of the pelvic region, and relief of low back discomfort. Therefore, gym ball exercises using the Back-and-Forth Child's Pose (BF-ChiPose) method represent a safe, practical, and effective non-pharmacological intervention with significant potential for managing low back pain in third-trimester pregnant women.

Conclusion

The study involving 15 respondents demonstrated that before receiving the gym ball intervention using the Back-and-Forth Child's Pose (BF-ChiPose) method, 3 respondents (20%) experienced mild low back pain, while 12 respondents (80%) experienced moderate pain. Following the intervention, the distribution of pain levels improved substantially: 3 respondents (20%) reported no pain, 10 respondents (66.6%) experienced only mild pain, and 2 respondents (13.4%) continued to experience moderate pain. In addition, the mean pain score decreased from 3.00 before the intervention to 1.96 after the intervention. These findings indicate that the use of a gym ball combined with the Back-and-Forth Child's Pose method was effective in reducing the intensity of low back pain among pregnant women in the third trimester.

Based on the results of the statistical analysis, a p-value of 0.000 was obtained, which is lower than the significance level of 0.05 ($p < 0.05$). This result indicates that the gym ball intervention using the Back-and-Forth Child's Pose (BF-ChiPose) method had a statistically significant effect on reducing low back pain among women in the third trimester of pregnancy.

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Author Contributions

All authors: contributed to the final approval of the manuscript and agree to be accountable for all aspects of the works, ensuring the accurarcy and integrity of study.

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Conflicts of Interest
The author declares that there are no financial or non-financial conflicts of interest related to thhid study. The author also confirms that this research was conducted without any commercial or financial reliationships that could be interpreted as a potential conflict of interest.

References

Adita, L., Saudah, N., & Dewi, C. P. L. (2021). Gambaran nyeri punggung pada ibu hamil trimester III di Puskesmas Puspo. STIKes Bina Sehat PPNI Mojokerto. https://repositori.stikes-ppni.ac.id/handle/123456789/237

Anggraini, C. S., Dewi, N. R., Ayubbana, S., Dharma, A. K., & Metro, W. (2022). Literature review: Gym ball exercise for lower back pain in third trimester pregnant women. *Jurnal Cendikia Muda, 2*(2), 168–172.

Anuhgera, D. E., Ritonga, N. J., Sitorus, R., & Simarmata, J. M. (2021). Penerapan birth ball dengan teknik pelvic rocking terhadap lama persalinan pada kala I fase aktif. *Jurnal Keperawatan dan Fisioterapi, 4*(1), 70–76. https://doi.org/10.35451/jkf.v4i1.837

Arummega, M. N., Rahmawati, A., & Meiranny, A. (2022). Faktor-faktor yang mempengaruhi nyeri punggung ibu hamil trimester III: Literatur review. *Oksitosin: Jurnal Ilmiah Kebidanan, 9*(1), 14–30. https://doi.org/10.35316/oksitosin.v9i1.1506

Fitriani, L. (2018). *Nyeri punggung bawah pada ibu hamil*. [Referensi tidak lengkap].

Hani, U., Kusbandiyah, J., Marjati, & Yulifah, R. (2014). *Asuhan kebidanan pada kehamilan fisiologis*. Salemba Medika.

Hatijar, Saleh, I. S., & Yanti, L. C. (2019). *Asuhan kebidanan pada kehamilan*. CV. Pustaka Taman Ilmu.

Hau, W.-L., Tsang, S.-L., Kwan, W., Man, L. S.-K., Lam, K.-Y., & Ho, L.-F. (2018). The use of birth ball as a method of pain management in labour. *Hong Kong Journal of Gynaecology, Obstetrics and Midwifery, 12*(1), 1–6.

Ibanez, G., Khaled, A., Rohani, S., Nizard, J., Baiz, N., Robert, S., & Chastang, J. (2017). Back pain during pregnancy and quality of life of pregnant women. *Primary Health Care: Open Access, 7*(1), 1–6. https://doi.org/10.4172/2167-1079.1000261

Irawati, A., Susanti, S., & Haryono, I. (2019). Mengurangi nyeri persalinan dengan teknik birthing ball. *Jurnal Bidan Cerdas, 2*(3), 129–134. https://doi.org/10.33860/jbc.v2i3.282

Janah, S. A. N. J., Kesumadewi, T., & Dewi, N. R. (2023). Penerapan gym ball terhadap nyeri punggung pada ibu hamil trimester III di wilayah kerja Puskesmas Ganjar Agung Kota Metro tahun 2022. *Jurnal Cendekia Muda, 3*(4), 585–593. https://www.jurnal.akperdharmawacana.ac.id/index.php/JWC/article/view/508/341

Kementerian Kesehatan Republik Indonesia. (2017). *Asuhan kebidanan kehamilan*. Kementerian Kesehatan RI.

Kisner, C., & Colby, L. A. (2017). *Therapeutic exercise: Foundations and techniques* (7th ed.). F. A. Davis.

Kusumawati, W., & Jayanti, Y. D. (2018). Efek senam hamil terhadap nyeri punggung pada ibu hamil di wilayah kerja Puskesmas Tiron. *Prosiding SNasPPM, 3*(1), 266–269.

Lowdermilk, D. L., Perry, S. E., & Cashion, K. (2013). *Keperawatan maternitas* (Ed. 8, Buku 1; F. Sidartha & A. Tania, Trans.). Salemba Medika.

Manyozo, S. D., Nesto, T., Bonongwe, P., & Muula, A. S. (2019). Low back pain during pregnancy: Prevalence, risk factors and association with daily activities among pregnant women in urban Blantyre, Malawi. *Malawi Medical Journal, 31*(1), 71–76. https://doi.org/10.4314/mmj.v31i1.12

Mirzakhani, K., Hejazinia, Z., Golmakani, N., Sardar, M. A., & Shakeri, M. T. (2015). Effect of performing birth ball exercises during pregnancy on mode of delivery in primiparous women. *Journal of Midwifery and Reproductive Health, 3*(1), 269–275. https://doi.org/10.22038/jmrh.2015.3562

Mutoharoh, S., Kusumastuti, & Indrayani, E. (2019). *Efektivitas birth ball selama kehamilan terhadap lama persalinan*. Leutika Prio.

Ni'amah, S., & Sulistiyaningsih, S. H. (2023). Efektivitas yoga pranayama dan teknik gym ball terhadap penurunan nyeri punggung pada ibu hamil trimester III. [Referensi tidak lengkap].

Ni'amah, S., & Sulistiyaningsih, S. H. (2024). Perancangan model gerakan gym ball dengan metode Back and Forth Child's Pose (BF-ChiPose) untuk mengurangi nyeri punggung pada ibu hamil trimester III. [Referensi tidak lengkap].

Purnamasari, K. D. (2019). Nyeri punggung bawah pada ibu hamil trimester II dan III. *Journal of Midwifery and Public Health, 1*(1), 9–13. https://doi.org/10.25157/jmph.v1i1.2000

Reeder, S. J., Martin, L. L., & Griffin, D. K. (2018). *Keperawatan maternitas: Kesehatan wanita, bayi, dan keluarga* (Vol. 1). EGC.

Safitri, R., & Desmawati. (2022). Pengaruh penggunaan birth ball terhadap penurunan nyeri punggung bawah pada ibu hamil trimester III. *Edu Masda*

Journal, 6(1), 54–60. https://doi.org/10.52118/edumasda.v6i1.153

Saptyani, P. M., Suwondo, A., & Runjati. (2020). Utilization of back movement technique to intensity of low back pain in third trimester pregnant women. *STRADA Jurnal Ilmiah Kesehatan, 9*(2), 535–542. https://doi.org/10.30994/sjik.v9i2.335

Shanti, E. F. A., & Utami, N. W. (2021). Efektivitas prenatal yoga dengan teknik birth ball pada ibu hamil terhadap nyeri punggung. *Jurnal Kebidanan, 16*(1), 20–26.

Silfia, N. N., Pont, A. V., & Sulasmi. (2020). Pengaruh pelaksanaan pelvic rocking dengan birthing ball terhadap pengurangan nyeri pinggang persalinan kala I di wilayah Puskesmas Mamboro Kota Palu. *Viva Medika: Jurnal Kesehatan, Kebidanan, dan Keperawatan, 13*(2), 169–179.

Sinulingga, S., & Patriani, S. (2022). Pemanfaatan birth ball pada ibu hamil di PMB Muzilatul Nisma Kota Jambi. *Jurnal Abdimas Kesehatan, 4*(2), 285–290. https://doi.org/10.36565/jak.v4i2.330

Surtiningsih, Susiloretni, K. A., & Wahyuni, S. (2016). Efektivitas pelvic rocking exercises. *The Soedirman Journal of Nursing, 11*(2), 117–129.

Wijayanti, I. T. (2020). Perbandingan ibu hamil yang melakukan exercise gym ball dan ibu hamil yang melakukan senam hamil terhadap penurunan nyeri punggung bawah. *Jurnal Keperawatan/Kebidanan Indonesia, 11*(1), 38–46.

Yusup, F. (2018). Uji validitas dan reliabilitas instrumen penelitian kuantitatif. *Jurnal Tarbiyah: Jurnal Ilmiah Kependidikan, 7*(1), 17–23.

Zaky, N. H. (2016). Effect of pelvic rocking exercise using sitting position on birth ball during the first stage of labor on its progress. *IOSR Journal of Nursing and Health Science, 5*(4), 19–27. https://doi.org/10.9790/1959-0504031927