

The Effect of Sports on the Phenomenon of Baby Blues Syndrome (Postpartum Blues) in Postpartum Mothers

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Abstract—1) **Purpose:** baby blues syndrome often occurs in postpartum mothers. The prevalence of baby blues syndrome worldwide according to WHO is around 3% to 8%. In Asia, cases of baby blues syndrome are still very high. In Indonesia, it will increase to 70-80% in 2020. The incidence of baby blues syndrome can be prevented and overcome by intervention in the form of exercise; 2) **Methods:** this study uses literature studies from articles indexed by google scholars and pubmed with the keywords sports, baby blues, postpartum, depression in order to obtain 10 quantitative research articles; 3) **Results:** several research articles stated that exercise was able to overcome postpartum depression or baby blues syndrome with an intervention time of about 4-8 months as measured using the EPDS questionnaire; 4) **Conclusion:** exercise with light to moderate intensity can prevent symptoms of depression and is safe for mothers and babies.

Keywords— *Exercise, Baby Blues, Postpartum, Psychological, Mother*

I. INTRODUCTION

The postpartum period in the mother starts from the birth of the placenta until the uterus returns to its pre-pregnancy condition. The puerperal period lasts for about 6 weeks, i.e. the delivery of the placenta to 42 days after delivery [1]. After giving birth, the mother will undergo several adaptation phases such as the taking in phase, taking hold phase, and letting go phase [2]. The taking-in phase is a dependency phase that takes place on the first and second day after delivery. Mothers will focus on themselves, tend to be passive in their surroundings and increase appetite. Furthermore, the taking hold phase is where the mother feels worried because she is unable to take care of the baby and is easily irritated so that in this

phase postpartum depression often occurs. This phase lasts from the third to tenth day after delivery. The last phase is the letting go phase which takes place after 10 days of delivery where at this phase the mother will accept new responsibilities and roles as a mother for the baby she is born with. If in this phase the mother cannot go through the psychological adaptation process properly, then a mother has a high probability of experiencing Baby Blues Syndrome.

WHO (2018) noted the prevalence of postpartum blues in general in the world population is 3-8% with 50% of cases occurring in productive ages, namely 20-50 years. WHO also states that this postpartum blues disorder affects about 20% of women and 12% of men at some time in life [3]. The incidence of baby blues or postpartum blues in Asia is quite high and varies between 26-85%, while in Indonesia the incidence of baby blues or postpartum blues is between 50-70% of postpartum women [1]. In Indonesia, the incidence rate will increase in 2020 to around 70-80% of postpartum mothers experiencing baby blues syndrome and around 10-13% of them continue to have postnatal depression [4]–[7].

Baby blues syndrome is a mild emotional stability disorder in the mother as a result of the adjustment process for the birth of the baby which takes place within a few hours to about two weeks with the peak of instability occurring on days 3-5 [8]. Emotional instability in postpartum mothers who experience baby blues syndrome triggers mothers to be irritable, feel excessively worried, feel unable to perform their duties as a good mother, and at a severe level of disturbance can make the mother indifferent and even abuse their biological child. [9]. The phenomenon of Baby Blues Syndrome can be caused by tiredness of

taking care of the baby, fatigue during the delivery process, hormonal changes that go up and down quickly, excessive anxiety and worries about not being able to take care of the baby alone [10].

Baby Blues Syndrome as a mild emotional disorder can be prevented and minimized the risk with physical activity. Interventions in the form of exercise function to restore health conditions, accelerate healing, restore, improve muscle tension after pregnancy, especially in the muscles of the back, pelvic floor, and abdomen and prevent complications

[11]. In addition, the positive effect of regular physical activity in relieving depressive disorders was explained using several mechanisms [12]. Exercise increases the concentration of neurotransmitters such as 5HT, dopamine, and noradrenaline. In addition, physical activity increases the secretion of BDNF (a neurotrophic factor produced in the brain), the concentration of which is low in people with depression [13]. A meta-analysis conducted by McCurdy et al. showed that light or moderate physical activity effectively reduced depressive disorder symptoms in women in the postpartum period [14].

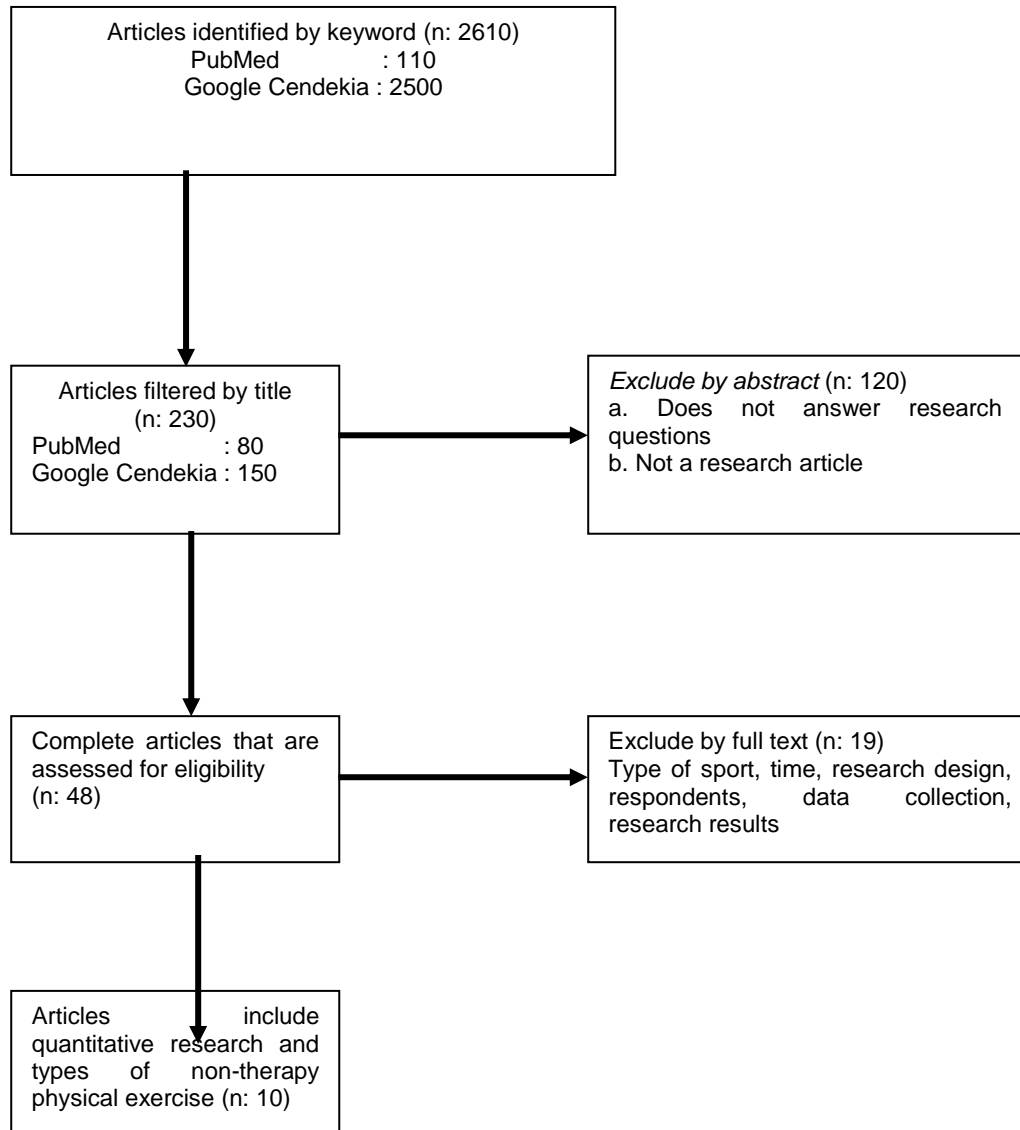


FIGURE 1. PRISMA FLOWCHART OF RESEARCH DATA EXTRACTION

II. METHOD

A. Data Source

This study uses a literature study method taken from scientific databases indexed by Google Scholar

and PubMed. The literature in this study is an article on the results of primary quantitative research conducted from 2011 to 2021 which contains research on the effect of exercise on postpartum mothers who experience the baby blues syndrome. This study uses several keywords to search for relevant literature such

as exercise, baby blues syndrome, postpartum blues, mothers giving birth, postpartum, and postpartum mothers. Next, a list of related articles will appear which will be further selected.

B. Data Extraction

The search and data extraction strategy in this study used the PRISMA flow chart (figure 1) [15]. The total search results of research articles based on keywords, obtained as many as 2610 articles. Then the articles that have been identified based on the titles are 230 articles. Furthermore, the entire article is identified as the abstract section. Articles that did not answer the research question and did not include research articles were excluded for the next stage so that 120 articles were obtained. The remaining articles are then identified as a whole such as the author's name, type of sport, research time, research design, data collection method, research respondent selection, number of respondents, and research results. So that 19 articles were obtained that were appropriate and relevant to the research, but 4 articles that were included in qualitative research were not used in this study. Therefore, at the final stage there were only 15 quantitative research articles for review.

III. RESULT AND DISCUSSION

A. RESULT

After selecting articles using the PRISMA flowchart method, 10 quantitative research articles were obtained that were published from 2011 to 2021 (table 1). Research articles on the effect of exercise on baby blues syndrome or postpartum depression are scattered in various countries. According to the article search results that have been carried out, there are several countries such as Indonesia (n=1), Iran (n=1), Japan (n=1), India (n=1), United States (n=1), Brazil (n=1), Spanish (n=1), Norwegian (n=2), and English (n=1). The research was conducted using three types of research designs, namely randomized controlled studies (n=4), cohort studies (n=5), and quasi-experimental studies (n=1).

3.1.1. Types of Exercise in Baby Blues Syndrome

Sports exercises carried out in the prenatal period are able to prevent the occurrence of postpartum blues or baby blues syndrome. These exercises include Qigong movement exercises that focus on slow body movements and body balance with a combination of subtle breathing techniques, so as to reduce stress

levels associated with the psychological condition of the mother after giving birth [16]. The sports concept in the form of Low, Moderate to Vigorous Physical Activity was chosen as an intervention in the study (n=5). The concept is the provision of physical exercise with different intensity levels based on international physical activity guidelines which are categorized into low intensity with Metabolic Equivalent (MET) <600 minutes/week, moderate or moderate intensity with MET 600-2999 minutes/week, and high intensity with MET. 3000 minutes/week [17]–[21].

Other variations of exercise training applied were aerobic exercise (n=2) and group training with instructors (n=2). In the study of Carolina de Vargas Nunes Coll et al (2019), aerobic and endurance exercise for 16 weeks did not have a significant effect on maternal postpartum depression [22]. Meanwhile, the study by Araceli Navas et al (2021) in Spain that used an intervention in the form of aquatic aerobic exercise stated that the intervention group did not report postpartum anxiety or depression [23]. In a study conducted by Kristian M Songoygard et al (2011) who was guided by a physiotherapist for 12 weeks stated that there was no significant difference according to the respondents' EPDS scores [24]. However, another study conducted by Amanda J Daley et al (2012) using an intervention in the form of group exercise training accompanied by an instructor with a longer intervention time of 6 months stated that exercise was effective for treating postpartum depression [25].

3.1.2. Instruments for Measuring the Effectiveness of Exercise in Baby Blues Syndrome

To obtain research data, almost all studies used the Edinburgh Postnatal Depression Scale (EPDS) questionnaire (n=9) but there were several studies using other questionnaires. The questionnaires included demographic characteristics and physical activity (n=1), Psychological General Well-Being Index (PGWBI) (n=1), Physical Activity Level (n=1), Kessler Psychological Distress Scale (n=1), International Physical Activity Questionnaire (IPAQ), EQ-5D. The EPDS is a 10-item questionnaire that was developed to identify women with postpartum depression with various symptoms of clinical depression such as feelings of guilt, sleep disturbances, anhedonia, fatigue, and even suicidal

ideation [26]. EPDS can be used after one month postpartum to 8 months postpartum to detect the presence of postpartum depression in the mother.

3.1.3. Characteristics of Pregnant Women Who Received Intervention

This research is a research that requires a long time. This is because this study does not only focus on postnatal events but also on maternal prenatal activities. There are 8 studies involving the prenatal period and 2 other studies only examining the postnatal period of the mother. Pregnant women who are respondents are women who check their pregnancy and postnatal conditions in the same place. They were then given an intervention at a gestation period between 14-36 weeks. In addition, women who are respondents in the study are women who do not have contraindications such as hypertension, diabetes, and obesity because they can be confounding variables. Mother's compliance in doing sports exercises that have been determined also affects.

B. DISCUSSION

In this study, the article used is a research article that discusses the effect of exercise on the incidence of postpartum depression or baby blues syndrome. In Kristian's research in 2011 stated that there was no significant difference in EPDS scores between women who did regular exercise and women in the control group with 3 times of data collection so that the EPDS scores were 10 ($p=0.46$), 13 ($p=0.25$), and 10 ($p=0.03$). Furthermore, in 2012, research by Amanda J Daley stated that there is a relationship between exercise and postnatal depression so that exercise is effective for treating postnatal depression.

Research conducted by Zewditu Demissie, (2013) stated that there was no significant relationship between total MVPA during pregnancy and symptoms of postpartum depression. However, there was a decrease in postpartum depression symptoms found in pregnant women who did MVPA exercises at 17-22 weeks of gestation. While research by Parvin Bahadoran, (2014) showed that 74.7% ($n = 68$) subjects had light physical activity and 25.3% ($n = 23$) had moderate and heavy physical activity. The results of this study stated that there was no significant difference between the two groups of physical activity. The mean score of maternal well-being in the light physical activity group was lower than in the moderate and strenuous activity group.

In 2019, there were 3 studies from Indonesia, Norway and Brazil. The results of research in Indonesia by Jehan Puspasari and Dian Fitria showed that there was an effect between qigong exercise intervention and prevention of postpartum depression symptoms in adolescent mothers with a p value of 0.000. In a study in Norway stated that there was no difference in EPDS between the group given the exercise 2.96 and the control group 3.48 ($p=0.55$). So there was no effect between exercise during pregnancy and postpartum depression. And the results of a study in Brazil by Carolina de Vargas Nunes stated that there was no significant difference in the mean score for postpartum depression between the intervention group and the control group. There was also no significant difference in the rate of postpartum depression between the intervention group and the control group.

However, a recent study in 2020 and 2021 stated that women with light activity only had lower psychological distress during pregnancy than those who did not do physical activity, low physical activity during pregnancy had a 2.3 times chance of experiencing depression. postpartum and were 3.15 times more likely to experience postpartum blues in obese, hypertensive, and diabetic mothers, and women in the intervention group were less likely to report anxiety or depression on the EQ5D and had a lower mean EPDS score (6.1 ± 1.9 vs. 6.8 ± 2.4 , $p < 0.010$).

Table 1. Analysis of previous research articles

No	Author	Title	Date of Publication	Country	Research Design	Sports Type	Method of Data Collection	Respondents Criteria	Number of Respondents	Research Results
1	Kristian M. Songoygard, N Signe Stafne, Kari Anne I Evensen, Kjell A Salvesen, Torstein Vik, Siv Morkved	Does Exercise during Pregnancy Prevent Postnatal Depression?	2011	Norway	Randomized controlled trial	Group training sessions with a physiotherapist once a week and self-training at home twice weekly for 12 weeks	EPDS Questionnaire after 3 months of giving birth	Pregnant women having prenatal care at Trondheim and Stavanger Hospitals	855 were randomized to intervention and control groups (receiving regular ANC)	There was no significant difference in EPDS scores between women who did regular exercise and women in the control group. The scores obtained are 10 ($p=0.46$), 13 ($p=0.25$), and 10 ($p=0.03$)
2	Amanda J Daley, Kate Jolly, Debbie J Sharp, Katrina M Turner, Ruth V Blamey, et al	The Effectiveness of Exercise as a Treatment for Postnatal Depression: Study Protocol	2012	English	Randomized controlled trial	Sports training accompanied by an instructor for 6 months	EPDS questionnaire after 6 months of delivery and IPAQ during practice	Women with a clinical definition of postpartum clinical depression based on the ICD-10 diagnosis of depression.	208	This study states that there is a relationship between exercise and postnatal depression. Exercise is effective for treating postnatal depression.
3	Zewditu Demissie, Anna Maria Siega-Riz, R. Kelly Evenson, Amy H. Herring, Nancy Dole, Bradley N. Gaynes	Physical Activity During Pregnancy and Postpartum Depressive Symptoms	2013	North Carolina, United State	Prospective cohort research	Moderate-to-Vigorous Physical Activity (MVPA)	EPDS questionnaire assessment conducted for 3 months postpartum	Women attending prenatal and postnatal checkups at the University of North Carolina clinic during 2001 - 2005	652	There was no significant relationship between total MVPA during pregnancy and postpartum depression symptoms. However, there was a decrease in postpartum depression symptoms found in pregnant women who did MVPA exercises at 17-22 weeks of gestation.
4	Parvin Bahadoran, Fatemeh Tirkesh, Hamid Reza Oreizi	Association Between Physical Activity 3-12 Months After Delivery and Postpartum Well-being	2014	Dezfoul, Iran	Historical cohort research	Light, moderate, heavy physical exercise	A 3-stage questionnaire, the first is about demographic characteristics, the second is about the standard of physical activity, the third is about the intensity of physical activity	Iranian, can read and write, breastfeeding, 3-12 months postpartum, singleton birth	91	The results showed that 74.7% ($n = 68$) subjects had light physical activity and 25.3% ($n = 23$) had moderate and heavy physical activity. There was no significant difference between the two groups regarding physical activity. The mean score of maternal well-being in the light physical activity group was lower than in the moderate and strenuous activity group.
5	Jehan Puspasari, Dian Fitri	Efektivitas Qigong Selama Kehamilan dalam	2019	Indonesia	Quasi experiment with purposive	Qigong Exercise	Demographic questionnaire and EPDS questionnaire	Teenage mothers aged 16-19 years who are pregnant	27	The results showed that there was an effect between qigong exercise intervention and prevention of postpartum depression

6	Kirsti Krohn Garnaes, A. S. Helvik, Signe N Stalme, Siv Morkved, Kjell Salvesen, Oyvind Salvesen, Trine Moholdt	Pencegahan Gejala Depresi Postpartum pada Ibu Remaja	2019	Norway		Single-center, parallel group, and randomized controlled trials	Group exercise in 3 times per week until delivery. Each session is divided into 35 minutes of light exercise (walking/running) and 25 minutes of resistance training.	(Edinburgh Postnatal Depression Scale) To assess psychological well- being, we used the PGWBI (Psychological General Well-Being Index) at weeks 12- 18 of gestation, late pregnancy (weeks 34-37) and 3 months postpartum. Assessment of postpartum depression using the EPDS questionnaire.	Age 31.2±4.1 years, BMI 34.5±4.2 kg/m ² , with 46 respondents in the exercise group and 45 respondents in the control group	91	The results showed that there was no difference in EPDS between the group given the 2.96 exercise and the control group 3.48 (p=0.55). So that no effect was found between exercise during pregnancy and postpartum depression.
7	Carolina de Vargas Nunes Colli, Marlos Rodrigues, Alan Stein, Bruna Goncalves Cordeiro da Silva, Diego Garcia Bassani, etc	Efficacy of Regular Exercise During Pregnancy on the Prevention of Postpartum Depression	2019	Brazil		Randomized clinical trial with cohort study design	Physical exercise includes aerobic and resistance training for 16 weeks with 3 workouts (60 minutes/session) per week	EPDS Questionnaire 3 months postpartum	Mothers enrolled in the longitudinal analysis study, living and born in the city of Pelotas, gestational age 16-20 weeks, no congenital disease, age > 18 years	639 which were divided into 71 blocks where 1 block consisted of 9 respondents (3 intervention groups and 6 control groups)	There is no significant difference in the mean scores for postpartum depression between the intervention group (4.8) and the control group (5.4) (95% CI, 1.3-0.1). There was also no significant difference in rates of postpartum depression between the intervention group (6.3%) and the control group (9.3%) (ratio, 0.65; 95% CI, 0.33 to 1.28). Instrumental variable analysis indicated that non-adherence may have weakened the effect obtained in the main analysis in which adherence to the protocol, defined as engaging in at least 70% of exercise sessions, was low (40.4%).
8	Ryoko Susukida, Kentaro Usuda, Kei Hamazaki, Akiko Tsuchida, Kenta Matsumura, Daisuke Nishi, Hidekuni Inadera	Association of Prenatal Psychological Distress and Postpartum Depression with Varying Physical Activity Intensity: Japan Environment and Children's Study (JECS)	2020	Japan		National birth cohort study	Different intensity of daily physical activity (low, medium, high)	Prenatal psychological distress was assessed using the Kessler Psychological Distress Scale questionnaire. Activity during pregnancy was assessed using the International Physical Activity Questionnaire	Pregnant woman, Japanese nationality, and participating in JECS from 2011 to 2016	92,743	Women with only light activity had lower psychological distress during pregnancy than those who did not do physical activity. However, women with a combination of light, moderate, and vigorous activity had a higher likelihood of psychological distress during pregnancy and postpartum depression. Therefore, it is necessary to have a certain physical exercise program with optimal intensity for pregnant women to prevent and treat psychological stress and postpartum depression.

9	Yamuna Ana, Melissa Glenda Lewis, Onno C.P. van Schayck, Girdhara R. Babu	Is Physical Activity in Pregnancy Associated with Prenatal and Postnatal Depressive Symptoms?: Results from MAASTHI Cohort Study in South India	2021	India	Cohort study	Physical exercise with different intensity levels based on international physical activity guidelines	Pre-test, validated Physical Activity Level (PAL) questionnaire and EPDS questionnaire during the postnatal period	Pregnant women with a gestational age of 14 – 36 weeks who come to a general hospital	1405	The results showed that low physical activity during pregnancy has a 2.3 times chance of experiencing postpartum depression and has a 3.15 times greater likelihood of experiencing postpartum blues in obese, hypertensive, and diabetic mothers.
10	Araceli Navas, Maria del Carmen Carrascova, Catalina Aragues, Silvia Ortas, Elena Portells, Aina Soler, Aina M Yanez, Miquel Bennasar-Veny, Alfonso Leiva	Effectiveness of Moderate Intensity Aerobic Water Exercise during Pregnancy on Quality of Life and Postpartum Depression: A Multi Center, Randomized Controlled Trial	2021	Spain	Randomized, parallel, and centralized controlled study. Where there is an intervention group and a control group	The intervention group (moderate aquatic aerobic exercise) and the control group (an exercise) had an ANC examination as usual	One month postpartum were recorded sleep quality (MOS sleep), quality of life (EQ-5D), and depression or anxiety (EPDS).	Pregnant women with a gestational age of 14-20 weeks, have a low risk of complications, and come from five primary care centers in the obstetric unit area of Son Llatzer Hospital (Mallorca, Spain)	320	Women in the intervention group were less likely to report anxiety or depression on the EQ5D (11.5% vs 22.7%; $p < 0.05$) and had a lower mean EPDS score (6.1 ± 1.9 vs 8 ± 2.4 , $p < 0.010$). The two groups had no significant differences in other outcomes, maternal adverse events, and indicators of newborn status. So it can be said that moderate-intensity aquatic exercise during pregnancy reduces postpartum anxiety and depressive symptoms in mothers and is safe for mothers and babies.

IV. CONCLUSION

Baby Blues Syndrome as a mild emotional disorder can be prevented and minimized the risk with physical activity. Physical exercise with light to moderate intensity during pregnancy reduces postpartum anxiety and depressive symptoms in the mother and is safe for both mother and baby

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