

# The Effect of Postpartum Gymnastics on the Size of Abdominal Diastasis Rectus in Normal Postpartum

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**Abstract**—Factors causing diastasis recti during pregnancy such as increased levels of relaxant, progesterone, and estrogen hormones that cause softening of the tissue and weakening of the fragile alba line that tends to flow from the xiphoid process to the symphysis pubis and under the influence of hormonal changes. And continuous stretching is placed in the abdominal wall by growing the fetus. As a result, the amount of tension in a structure has weakened resulting in a tendency to separate and produce diastasis recti. The purpose of this study was to analyze the effect of puerperal exercise with the size of the abdominal rectus diastasis in postpartum mothers in the Kedung Health Center in Jepara Regency. This type of research is Quasi Experimental Static Group Comparison Design. The Longitudinal Time Serie approach method. The population in this study was postpartum mothers, amounting to 85 postpartum mothers. Sample selection using the Slovin method so that of the total number of postpartum mothers there were 46 respondents who were sampled. The observation sheet measuring instrument. The research test technique used the Wilcoxon. The result showed that there was an effect of puerperal exercise with the size of the abdominal rectus diastasis in postpartum mothers, with a p-value of 0,003 <0.05, then  $H_a$  was accepted and  $H_0$  was rejected. There is an influence between puerperal gymnastics and the size of the abdominal rectus diastasis in postpartum mothers in the Kedung Public Health Center in Jepara.

**Keywords**— *Postpartum Gymnastics, Diastasis Rectus Abdominal, Normal postpartum*

## I. INTRODUCTION

Changes in posture during pregnancy and gradual changes in body weight will cause the body's center of gravity to shift forward and if combined with stretching weak muscles (diastasis rectus abdominal) will cause lumbar bones accompanied by rounding of the shoulders and hanging chin, back muscles will shorten and if muscle stretching occurs it will cause muscle imbalance around the pelvis and additional stress can be felt over the ligament which can cause low back pain originating from the sacroiliac or lumbar and can be a long-term back disorder if muscle balance and pelvic stability are not restored after delivery [2].

Weak muscle stretch where the rectus abdominis muscles are separated in the midline line alba or often termed diastasis in postpartum mothers originating during pregnancy due to increased relaxin, progesterone, and estrogen hormones, causing softening of the tissue and weakening of the fragile alba line that tends to flow from the xiphoid process to the symphysis pubis and experience the effects of these hormonal changes. Coupled with the softening of the linea alba hormone is thus a continuous stretch placed in the abdominal wall by growing the fetus. As a result, the amount of tension in a structure has weakened resulting in a tendency to separate and produce diastasis recti [5].

Diastasis recti will return to normal as time goes by, but usually women feel psychological discomfort that is body image, physical discomfort such as back pain, limitations during physical activity.

In Javanese culture there is a term of using stagen to treat diastasis rectus abdominis, such as the results of Ernawati's research, et al. 05 ( $P = 0.238 > 0.05$ ), so it can be concluded that  $H_0$  is accepted. This proves there is no relationship between the use of stagen to Diastasis Rectus Abdominis. The fact that in the puerperal gymnastics field is still rarely done in hospitals and health care places. In the postpartum gymnastics community is also still rarely done because the mother after childbirth is afraid to make a lot of movements, mothers worry that the movements that will be carried out will have undesirable effects. From observations and interviews with officers at the Kedung Health Center in Jepara Regency in June, data on postpartum mothers aged between 20 and 30 years on average were 85 people per month. In the Kedung Puskesmas the childbirth gymnastics has never been done because postpartum mothers are afraid to make a lot of movements.

This study aims to analyze the effectiveness of puerperal gymnastics against Diastasis recti, with analysis of movements in puerperal exercises there are functions to tighten the abdominal muscles, improve abdominal muscle stretch.

**II. METHOD**

**A. Research Design**

This study used quasy experimental research, Nursalam (2008) with a static-group comparison design, researchers will provide treatment to the intervention group and the control group [5], with design forms in table 1.

**TABLE 1. QUASI EXPERIMENTAL RESEARCH DESIGN**

Subject	Pre-test	Treatment	Post-test
K-A	O	X	O1-A
K-B	O	-	O2-B

K-A: subject (postpartum) intervention  
 K-B: subject (postpartum) control  
 O: observation of abdominal rectus diastasis before the puerperal exercise (intervention group)  
 - : other activities (other than programmed postpartum gymnastics)  
 X: treatment  
 O1-A: Observation of abdominal rectus diastasis after 6 days of puerperal exercise was performed in the intervention group  
 O1-B: observation of abdominal rectus diastasis after 6 days of administration of the curve to the control group.

**B. Population and Samples**

The population of this study was 85 postpartum mothers in the Kedung Health Center in Jepara District in 2019 (based on February birth data). The sample in this study used the Sugiono formula of 46 respondents plus 10% to anticipate dropouts. With the inclusion criteria of normal postpartum mothers without complications Day 3.

**C. Data Colleting and Analysis**

The data were taken based on the patient's medical records in the past 3 months and then analyzed by Bivariate e data analysis techniques, because they are normally distributed, they use the T Test.

**III. RESULT**

**A. Characteristic of Respondents**

**1. Age**

**TABLE 2. CHARACTERISTIC OF RESPONDENT BASED ON AGE**

Age	Intervention		Control	
	Frequency	(%)	Frequency	(%)
<20	2	8.7		
21-29	12	52.2	16	69.8
>30	9	39.1	7	30.4
Total	23	100%	23	100%

Source: primary data, 2019

Based on the table above it can be concluded that the majority of the age group of the intervention group is vulnerable to 21-29 years old and the minority to vulnerable <20 years old while the majority of the age of the control group is vulnerable to age 21-29 years old and the minority age to vulnerable > 30 years old.

**2. Education**

**TABLE 3. CHARACTERISTIC OF RESPONDENT BASED ON EDUCATION**

Latest education	Intervention group		Control group	
	Frequency	(%)	Frequency	(%)
Ele mentary Education	0	0 %	0	0 %
Intermediate Education	23	100 %	23	100 %
High Education	0	0	0	0 %
Total	23	100%	23	100%

Source: primary data, 2019

Based on the table above, it can be concluded that the last education in the intervention group and the control group were all in the mid-level education category of 23 respondents (100%) in each group.

**3. Number of Births**

**TABLE 4. CHARACTERISTIC OF RESPONDENT BASED ON BIRTH**

Number of births	Intervention group		Control group	
	Frequency	(%)	Frequency	(%)
Primigravida	10	43.5	11	47.8
Multigravida	13	56.5	12	52.2
Total	23	100%	23	100%

Source: primary data, 2019

Based on the table above, it can be concluded that the majority of interventions in the delivery group are multigravida, 13 respondents (56.5%) and the minority of primigravidas are 10 respondents (43.5%), while the majority of control group births are multi gravida, 12 respondents (52.2%) and minority the number of deliveries was 11 primigravidas (47.8%).

**B. Univariate Analysis**

Measure the abdominal rectus rectification in the control group and intervene before treatment.

**TABLE 5. MEASUREMENT ABDOMINAL RECTUS RECTIFICATION IN THE CONTROL GROUP AND INTERVENE BEFORE TREATMENT.**

Group	mean	Median	SD
Control	2.578	2.500	0.3233
Intervention	2.675	2.633	0.3250

Measure the abdominal rectus in the control group and intervene after treatment was given.

**TABLE 6. MEASUREMENT MEASURE THE ABDOMINAL RECTUS IN THE CONTROL GROUP AND INTERVENE AFTER TREATMENT.**

Group	mean	Median	SD
Control	2.567	2.500	0.3196
Intervention	2.188	2.133	0.2709

Based on the table above, it is known that the size of the diastasis in the control group on average is almost the same as 2,578 to 2,567 while in the intervention group it shows a significant change from an average of 2,675 to 2,188

**C. Bivariate Analysis**

Data normality test results (Shapiro Wilk) showed that the abdominal rectus diastasis data in the control group before and after treatment were  $p = 0.517$  and  $0.183 \alpha \geq 0.05$ , respectively, as for the intervention groups before and after treatment, respectively  $p = 0.435$  and  $0.192 \alpha \geq 0.05$ . hence the data is said to have an informal distribution so the test used is paired T test.

The difference in the size of the abdominal rectus diastasis in the control group before and after treatment.

**TABLE 7. STATISTICAL ANALYSIS MEASUREMENT FOR CONTROL GROUP**

Group	Mean	SD	SE	P Value
Before control	2.578	2.500	0.3233	0.855
After control	2.567	2.500	.3196	

The difference in the size of the abdominal rectus diastasis in the intervention group before and after treatment

**TABLE 8. STATISTICAL ANALYSIS MEASUREMENT FOR INTERVENTION GROUP**

Group	Mean	SD	SE	P Value
Before intervention	2.675	2.633	0.3250	
After intervention	2.188	2.133	0.2709	0.000

The table above explains the T Test results, obtained p Value  $0.000 < 0.005$ , which means there is the significance of puerperal exercise on the size of the abdominal rectus diastasis in the intervention group, while the control group using a curve / stagen has no significant effect on the size of the rectal diastasis abdominal with p value  $0.855 > 0.005$

**IV. DISCUSSION**

Diastasis rectus abdominalis is a normal thing that occurs in mothers giving birth, which is a condition in which the muscles in the abdomen experience separation caused by pressure that occurs in the stomach. Jill SB in Meilina Estiani, 2018 states that a study found that rectal abdominalis diastasis occurs more widely in multiparas (on average 61.70 mm) than in primiparas (mean 54.78 mm) [4]. Lo (1999), states that risk factors Recast diastasis abdominalis are multiparity, maternal age > 34 years, larger babies, greater weight gain, Caesarean section and multiple gestions [3]. The results of this study indicate that the size of the diastasis in the control group on average is almost the same as 2,578 cm to 2,567 cm, while in the intervention group the significant change was from an average of 2,675 cm to 2,188 cm.

Respondents in this study, in terms of age were mostly 21-29 years old, in the control group 12 (52.2%), and the intervention group 13 (56.6%), whereas for the parity side of the majority of multiparities, in the control group 12 (52.2%) and the intervention group 16 (69.8%). Melina Estianti's research states that there is no significant relationship between age (p value 1,000) and parity (p value 0.302). Researchers believe that in the control group the diastasis

changes are not significant because there is no more activity to increase the strength of the abdominal muscles so that the abdominal muscles from the first day to the sixth day tend to be almost the same results according to the study of Ernawati, et al (2013) about the use of stagen with rectus diastasis abdominalis show Pearson chi-Square statistical test results of 0.238 which means  $P > 0.05$  ( $P = 0.238 > 0.05$ ), which shows there is no relationship between the use of stagen to Rectus Abdominal Diastasis [1].

The results showed there was an influence between puerperal gymnastics with abdominal rectus diastasis and Wilcoxon Test results showed a P value of 0,000. This is in accordance with the theory that puerperal gymnastics itself is a motion exercise that is carried out as soon as possible after delivery, so that the muscles that experience stretching during pregnancy and childbirth can return to normal conditions as before [3]. Strengthen the abdominal muscles so that by doing so after childbirth properly will help improve posture including accelerating the return of the strength of the abdominal muscles approaching before giving birth.

**V. CONCLUSION**

Based on the research conducted, it can be concluded as follows: Pulmonary tuberculosis events in the work area of Kaliwungu Kudus Community Health Center with 40 respondents, the largest percentage in primary education was 88.2%, while in the low economic status <UMK was 88.2%. There is a relationship between education and the incidence of pulmonary TB in Kaliwungu Kudus Health Center in 2017 with a value of 0.039 <0.05. There is a correlation between economic status and the incidence of pulmonary TB in Kaliwungu Kudus Health Center in 2017 with a value of 0.039 <0.05.

There is a significant influence between puerperal gymnastics and rectus abdominal diastasis in the area of Kedung Health Center in Jepara Regency with the result of p Value 0,000

**ACKNOWLEDGMENT**

This research was supported/partially supported by Muhammaiya University of Kudus. I really thank head of research and publication department of UMKU for assistance with particular technique, methodology and for comments that greatly improved the manuscript.

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