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Influence of Physical Fitness against for a Long Period Time in First and Second Stage of Labor in Primigravida at Medan City Indonesia

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Abstract: ***Introduction: Physical fitness of pregnant women who are exercise actively have a better vascularization than those who passively. Physical exercise is a major factor in improving physical fitness, flow capacity of the heart, and obtain a high oxygen during labor (Varney and others 2007, Hamilton 1995, Bobak and others 2005), therefore team authors were interested in researching about physical fitness effectiveness for a long period time in cervical opening time (stage 1) and time of birth to the fetus (stage 2)in primigravida(first pregnancy). Method: This type of research is a Quasi Experiment and Non-Equivalent Control Group, population total are 40 respondents (trimester III)primigravida(first pregnancy) measuring the level of physical fitness ($VO2_{max}$), period of 1st stage, 2nd stage and total period time of labor. Data analysis using T test. Result: from 20 respondents of experimental group and 20 groups non-experiment obtained homogeneous data regarding physical fitness and psychological condition. The average time period ofcervical opening time (stage 1)in experimental group are 387,75 minutes (Sd. 43,54), the average time period time of birth to the fetus (stage 2)are 27,75 minutes (Sd. 9,66). Total time childbirth average 334,50 minutes (Sd. 44,35), while in non-experimental group the period time of cervical opening time (stage 1) average 448,75 minutes (Sd. 41,64), time of birth to the fetus (stage 2) 40,00 minutes (Sd. 8,27) and the average of total Timechildbirth was 478,75 minutes (Sd. 82,64). T test in the experimental group and non-experimental group obtained homogeneous data because p value (0,794) > α (0,005). Period time of birth to the fetus (stage 2) pvalue (0,602) > α (0,005). The period total time childbirth not normal, analysist using Mann Whitney test obtained p value (0,00) < α (0,005). Concluded: That there is the influence of maternal physical fitness with period cervical opening time (stage 1) and time of birth to the fetus (stage 2) and suggested for all pregnant women improving physical fitness with physical exercise using a bicycle ergometer.***

Keywords: Physical fitness, cervical opening time (stage 1) and time of birth fetus (stage 2),

1. Introduction

Cases of maternal deaths occur due to complications from childbirth, such as bleeding, long the largest contributing labor that is 37%. The factors that lead to the old labor, among other factors, his mother i.e. the parity and age. The mother of primigravida(first pregnancy) risky experience long delivery of 2.06 times compared mother multipara (Wahyuningsih, 2009). A long Delivery time can occur in the cervical and vaginal opening phase gave birth to infants that can lead to inertia uteri hipotonik i.e. one of the factors that can cause a contraction time of childbirth on the opening of the cervix. Abnormalities of the uterine contraction is caused due to contraction of the uterine myometrium weariness so weak, infrequent and irregular. This situation can lead to time childbirth longer, and when cervical opening (stage 1) phase active will implies an increase in perinatal mortality and infection. (Oxorn& Forte, 2010)

A large risk and complications arising due to long delivery time, require an efficient way to increase uterine contractions by doing sports. Physiologically able to increase physical fitness sports and Vascularity of the blood so that it can improve muscle contractions of the uterus. Some studies also show that physical fitness is part of the health of pregnant mothersessensial, which generate long term benefits both physically and psychologically during the process of labor. (Guyton, 2008)

Physical fitness (VO2 Max) is influenced by the mechanisms of the body's ability in providing oxygen to the muscle that active work, physical exercise is a major factor that able to improve aerobic capacity, so the maximum oxygen dilates the blood vessels and improve the flow behind the bulk of the heart and veins and enlarge oxygen and nutrients to the muscles at a time when labor intensity and muscle power for the better. (Depkes.2005)

2. Research Methods

This type of research is Quasi Experimental research design, with Non-Equivalent Control Group where there are experimental groups i.e. groups who were given the treatment of physical fitness and who were denied treatment as non experiment.

Population research all expectant mothers primigravida(first pregnancy) trisemesterIII (36-40 weeks gestation)that checks a pregnancy at the clinic obstetrics Medan city. Sample research with purposive sampling technique as many as 40 people, 20 people on a group of experiments and 20 people on the non group experiment., the criteria of inclusion of maternal age 20-35 years, Body Mass Index before pregnant normal (18.5-24.9 kg/m2), weight gain while pregnant normal (11.5-16 kg), normal fetal heart rate (120-160 times/minute) and height > 145 cm, questionnaire research tool about physical activities with lightweight category and psychological anxiety level low.

Data analysis Normality test data using the Shapiro-Wilk, groups of experiment and experimental group of non Gaussian (1st stage and 2st stage), so use the T-test for independent samples T Test ie-Test, while the total labor

time trials Mann Whitney because it was discovered one of the groups is not Gaussian.

3. Research Results

on the experimental group is given preferential treatment to ride a bicycle ergometer exercise to achieve physical fitness,with a time of 6-12 minutes of exercise done at least four times a week to reach the dengut maximum pulse (DNM) then it can be called a shape. More research results can be seen in the table below:

Table 3.1: Normality Test Cervical Opening Time (Stage 1), and Time Gave Birth to A Fetus () and Total Time of Childbirth in the Maternity Clinic Medan City

No	Variabel	Shapiro- Wilknilai*p*	
		Eksperimen	Non Eksperimen
1	Cervical opening time	0,136	0,208
2	Time birth to a fetus	0,069	0,325
3	Total time of childbirth	0,396	0,00

Table 3.1 Above based on test of normality cervical opening time value p > α (0.005) on experimental group and group of non experimental, so the data is Gaussian. analysis with test T Test for independent samples T-i.e. Test. As for the variable total time childbirth to a group of non Gaussian no experiments where the value of p (0.00) < α (0.005) so that the analysis is done using Mann Whitney test.*The T-TestTo know the influence of physical fitness against the cervical opening time and time of birth to the fetus done test T-Test as shown in the table below:*

Table 3.2: The Influence of Physical Fitness Against the Cervical Opening Time and Time of Birth to the Fetus in the Maternity Clinic Medan City

Variable Eksperimen	Mean	Std.Deviation	Levenen's Test		t-Test
			F	Sig	Sig.(2-tailed
Cervical opening time Eksperimen Non Eksperimen	307,75 448,75	43,543 41,640	0,069	0,794	0,000
Time of birth to the fetus Eksperimen Non Eksperimen	27,75 40,80	9,662 8,272	0,277	0,602	0,000

Table 3.2 Above there was significant influence between the physical fitness with the cervical opening time and time of birth to the fetus in which the results of test of T-Test p value obtained (0.00) < α (0.005) Levenen's test results Test obtained p value (0,794) > α (0.005) cervical opening time and the value of p (0,602) > α (0.005) time gave birth to a fetus. assumption identical or homogeneous relative variance at the time of the opening of the cervix and the time gave birth to a fetus at both the experimental and non-experimental groups.

The Test Results of The Mann-Whitney U-TestTo know the influence of physical fitness to the total time of childbirth then done Mann-Whitney U-Test as shown in the table below:

Table 3.3: The Influence of Physical Fitness to the Total Time Hildbirth In The Maternity Clinic Medan City

Variabel	Mean	Std. Deviation	Mann-Whitney U-Test
Total time of childbirth			
Eksperimen	334,50	44,334	0,000
Non Eksperimen	478,75	82,635	

In table 3.3 are known from Mann Whitney test results obtained the value of p (0.00)< α (0.005), meaning there was influences of physical fitness to the total time of childbirth.

4. Discussion

4.1 Influence of physical Fitness to the time of cervical opening on expectant mothers primigravida (first pregnancy) group experiments with physical fitness test ($VO2_{max}$), at the age of pregnancy trisemester III (36-40 weeks gestation) in pregnant women primigravida, after physical fitness exercises with a frequency of 4 – 8 times a week with a duration of 6 – 12 minutes, the average time of cervical opening: 387.75 minutes (6.45) and while in the group non experiments without physical fitness exercises performed an average of 448.75 minutes (7.48 hours). From the results obtained that level of physical fitness will shorten the time spawned both stage i.e.cervical opening time (stage 1) and time of birth to the fetus (stage 2), That maximum physical fitness then labor contractions or labor pain is reduced because the total time labor will be reduced by as much as 1 hour 20 minutes more. In accordance with the theories of Friedman's average of cervical opening time (stage 1) active phase on mother primigravida 6 hours with a maximum value of 11.7 hours. Average and minimum values of cervical opening time (stage 1) the active phase of the same value, according to Friedman. Not appropriate research Roberg RA, *et al*,2003 to examine maternal age 16-38 old years238 person in Nigeria with a prospective observational method, the result is an average total time of childbirth at the primigravida mother is 11.23 minutes.

4.2. Influence of physical Fitness Against time of birth to the fetus (stage 2) in the mother of primigravida

Exercise physical fitness ($VO2_{max}$), in primigravida mothers trisemester III (30-40 weeks gestation), with a frequency of 4 – 8 times a week with a duration of 20 – 45 minutes and

intensity (85-95%) can be obtained from phase 2 (time gave birth to a fetus) in the Experimental group averaged 27.75 minutes and non experimental group averaged 40.00 minutes. Occur on the Group wants a shorter time within 12.25 minutes. This time is quite important in anticipating the occurrence of bleeding is also one of the main causes of maternal mortality. While according to Friedman's time gave birth to a fetus (stage 2) an average of 46 minutes. Time gave birth to a fetus (stage 2) on Primigravida limited to 2 hours. The research of the time gave birth to a fetus (stage 2) shorter than Friedman's theory, the results of this research relates to the strength of the activity of the uterine muscles to contract at a time when mothers want to give birth. The research of Kardel et al. 14 observational research on mother primigravida pregnancy (35-37 week gestation) to know the relationships between physical fitness ($VO2_{max}$), with a total time of childbirth. Results the average value ($VO2_{max}$), 2.1 L/min, the cervical opening time (stage 1) are rated from cervical opening 3 cm to 10 cm cervical opening (complete set), the average duration of time; 569 minutes, average time gave birth to a fetus (stage 2) is 45 minutes long, and the total childbirth are on average 583 minutes. This study is different because the criteria of large samples and gestational age is not the same, research results Yoong et al,. compare total time bore between the ethnic Kosovo with ethnic whites (Caucasians) in London showed that total time of bearing on Kosovo ethnic 5.52 i.e. shorter hours, whereas in the ethnic Caucasian 7.13 h ($p = 0.015$).

4.3. Influence of physical Fitness to the Total time childbirth on mother primigravida (first pregnancy)

Exercise physical fitness ($VO2_{max}$), in primigravida (first pregnancy) mothers with gestational age 36-40 Sunday, with a frequency of 4 – 8 times in a week and duration 20 – 45 minutes with intensity (85-95 %) can be obtained from the total time on the Group's experiments gave birth to an average of 334.50 minutes (5.57 hours) and experimental group of non 478.75 average minutes (7.79 hours), then it can be concluded in a total time of childbirth on mother primigravida with physical fitness exercises less compared to the total time primigravida(first pregnancy) mothers give birth do not do physical fitness exercise. The difference of time doing fitness exercises with not doing fitness exercises i.e. 2 hours 22 minutes. This relates to a decrease of anxiety of the mother and family at the time of inpartu. According the results of some other studies suggesting that women who have had the value of physical fitness (Vo2maks) has a higher cardiovascular condition is good as compared to women who are not active (Masdin, 2010). The research is in line with the research of Homs, et al. that compares total time gave birth to women active with women who are not active, the cervical opening time (stage1) in active women 11.5 hours and inactive in females 12.6 hours. Total time of childbirth on women active 13.4 hours and in women not actively 14.6 minutes.

5. Conclusions and Suggestions

There is the influence of physical fitness on pregnant mothers trisemester III with cervical opening time (stage 1) and time of birth to the fetus (stage 2) is recommended for all pregnant women increase physical fitness with physical exercise (ergometri bicycle).

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