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THE RELATIONSHIP BETWEEN EXERCISE FREQUENCY WITH THE MENSTRUAL CYCLE OF THE ADOLESCENT ON PENCAK SILAT GROUP

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Abstract

Background : Excessive physical activity is one factor that can cause menstrual disorders. Disorders that can occur include the absence of menstruation (amenorrhea), bone thinning (osteoporosis), irregular menstruation or intermenstrual bleeding, abnormal growth of the uterine lining, and infertility (Asmarani, 2010). Wiarto (2013) explains that in sports discussed about menstruation is an irregular menstrual cycle (oligomenorrhea or reduced menstrual frequency) or menstruation stops beyond 90 days (amenorrhea or absence of menstrual cycle). The purpose of the study: the purpose of the study is to determine the relationship between the frequency of exercise with menstrual cycle in adolescent girls SMAN in Purwokerto who follow the practice of pencak silat. Research method: This research is a descriptive research with quantitative approach with total sample of 126 respondents, sampling technique is by non probability sampling technique that is by purposive sampling technique. Result of research: The result of statistical test by using simple logistic regression shows that there is relationship between exercise frequency with menstrual cycle with p = 0,000 (p <0,05). Conclusion: This result suggests that excessive exercise is seen in terms of exercise frequency and duration of exercise leading to dysfunction in the hiothalamus leading to impairment of GnRH pulsatility that may inhibit FSH secretion. Suggestions: The suggestions that can be given here is necessary for further research with a larger sample size and consider the psychological condition and nutritional status of respondents

Keywords: Dismenorhea, frequency of exercise

1. Introduction

Menstruation is an episode of periodic expulsion of blood, mucus, and epithelial cells from the uterus. Menstruation generally occurs at intervals every month during the reproductive period, except during pregnancy and lactation. Menstruation is part of the menstrual cycle, an important component in the female reproductive cycle (Reeder et al, 2013).

This period will change the behavior of various aspects, such as psychology and others. In women usually first experience menstruation (menarche) at the age of 12-16 years. Normal menstrual cycle occurs every 22-35 days, with menstrual duration for 2-7 days (Kusmiran, 2011).

In RISKESDAS (2010) stated that the percentage of women aged 10-59 years in Indonesia who experienced irregular menstruation of 13.7%. More specifically, as many as 3.5% of teens aged 10-14 years and as many as 11.7% of 15-19 year olds who have irregular menstruation. The most common complaint of menstrual disturbance is dysmenorrhea. The incidence of dysmenorrhea is 64.25%, consisting of 54.89% primary dysmenorrhea, while the rest are secondary type sufferers. In Central Java, the percentage of women aged 10-59 years who experienced irregular menstruation by 13.1%. The reason for irregular menstruation in women aged 10-59 years in Central Java was 0.3% due to illness, 5.4% of family planning problems, 3.2% menopause, 3.9% others, and 7.7% did not know The reason. The incidence of disminore in Central Java alone reached 56%.

Excessive physical activity is one factor that can cause menstrual disorders. Disorders that can occur include the absence of menstruation (amenorrhea), bone thinning (osteoporosis), irregular menstruation or intermenstrual bleeding, abnormal growth of the uterine lining, and infertility (Asmarani, 2010). Wiarto (2013) explains that in sports discussed about menstruation is an irregular menstrual cycle (oligomenorrhea or reduced menstrual frequency) or menstruation stops beyond 90 days (amenorrhea or absence of menstrual cycle).

Women increasingly actively participate in and participate in sports competitions. Although exercise has many advantages, it can lead to some disruption when done excessively in women. The nature and severity of symptoms depends on several things such as type of exercise, intensity, duration of exercise, and also the rate of development of the coach program. Sports groups that are classified as heavy exercise, endurance, gymnastics and martial arts (Homai, et al, 2014).

The best known martial art in Indonesia is pencak silat. In sports pencak silat there are types of exercises such as the art of movement, and fighting (tarung). Movement exercises on pencak silat combined, for example, strength training, agility, the formation that can be done with stretching, jogging, sprint, jump, and so the movement in the sport of martial arts is quite complex. In pencak silat is also taught techniques to hit, kick, dodge, parry, fall, and lock. In martial arts sport is not uncommon competition competition which often requires preparation by doing regular exercises including endurance training (physical exercise) with increased frequency as well as martial techniques. In addition, the psychic aspect of emotional mastery, motivation and intelligence and other elements related to psychology is needed to be more supportive to be a good pesilat (Zulfikar, 2014).

In adolescent girls if this exercise is excessively can cause the occurrence of hypothalamic dysfunction that will cause disruption of GnRH secretion (Asmarani, 2010). This results in delayed menarche and impairment of the menstrual cycle. The main factor causing GnRH suppression in female athletes is the excessive use of energy that exceeds energy intake in athletes (Asmarani, 2010).

Tanudjaja et al (2016) conducted a study on female basketball athletes in SMAN 9 Manado as many as 32 children, of which 16 respondents had disruption of menstrual cycle pattern, that is 12 respondents polimenorea, 4 respondents oligomenorea, and 1 respondent had secondary amenorrhoea. Then Homai et al (2014) also conducted research on female students in Iran by comparing 180 female athletes and 180 female non-athletes on the regularity of menstruation and dysmenorrhea. The results showed that exercise can cause menstrual disorders, in which athletes of 128 (71.11%) had regular menstrual cycles and 52 (28.88%) were irregular, whereas in college students not athletes of 146 (81.11%) regular menstrual cycles And 34 (18.88%) irregular menstrual cycles.

Barker (2007) conducted a study where the incidence of menstrual cycle disorders in athletes was reported at 28.8% compared with controls of 9.4%. In this study, there was a significant result ($p = 0.028$) between athlete group and control of the occurrence of menstrual disorder which means there is influence of sport to menstrual cycle. Asmarani (2010) conducted a study on the effect of exercise on athletic menstrual cycle showed significant relationship between exercise and athletic menstrual cycle ($p < 0.05$) on frequency variables and duration of exercise. The frequency of exercise per week in athletes whose irregular menstrual cycle is often significantly greater than that of regular menstrual cycle ($p = 0.002$). Furthermore, the duration of exercise in athletes whose irregular menstrual cycle is longer than the regular menstrual cycle ($p < 0.001$).

There are no studies have examined the effect of martial arts training on the menstrual cycle in women. This is because martial arts is a sport that studies how fighting techniques so that the sport is synonymous with men and only a few female enthusiasts.

The result of preliminary study conducted on adolescent girls in pencak silat training group in Purwokerto area as many as 10 children, there are 6 children who have irregular menstrual cycle, 4 children have polimenorea and 2 children have oligomenorrhoea, and 4 children have regular menstrual cycle. For dysmenorrhea there are 7 children do not feel pain during menstruation and 3 children feel menstrual pain.

2. Methods

2.1 Research design

This research is a descriptive research with quantitative approach. According Hidayat (2009), descriptive research is a design to describe a set of events or conditions of the population at that time. Meanwhile, according to Sugiyono (2012) descriptive method is a method used to analyze data by way of describing or describing the data that has been collected as it is without intending to make conclusions that apply to the public or generalization. This approach is used to determine the relationship of independent variables (exercise frequency) with the dependent variable (menstrual cycle).

2.2 Population and Sample

The population in this study were girls of SMAN in Purwokerto who followed pencak silat training as an extracurricular in their school consisting of 5 schools namely SMA N 1 Purwokerto as many as 48 children, SMA N 2 Purwokerto as many as 48 children, SMA N 3 Purwokerto as many as 22 children, SMA N 4 Purwokerto as many as 45 children, and SMA N 5 Purwokerto as many as 20 children, so the total total population is 183 children. Based on the result of calculation of samples according to Slovin formula, the sample of 126 respondents is obtained. Sampling technique conducted in this research is by non probability sampling technique that is by purposive sampling technique.

The number of samples is then divided into equal proportions for each study site in the following manner:

Table 1. Total population and sample research

No	Location	Population	Sample
1	SMA Negeri 1 Purwokerto	48	$\frac{48}{183}$ x 126 = 33
2	SMA Negeri 2 Purwokerto	48	$\frac{48}{183}$ x 126 = 33
3	SMA Negeri 3 Purwokerto	22	$\frac{22}{183}$ x 126 = 15
4	SMA Negeri 4 Purwokerto	45	$\frac{45}{183}$ x 126 = 31
5	SMA Negeri 5 Purwokerto	20	$\frac{20}{183}$ x 126 = 14
Amount		183	126

3. Results

3.1 Characteristics of respondents by age

Table 2
Descripsion of Respondent By Age

	Minimum	Maximum	Median	Standard deviation
Age	15	18	16	0.742

Based on Table 2 it is known that the youngest respondent's age is 15 years and the age of the eldest respondent is 18 years.

3.2 Description of the menstrual cycle of respondents

Table 3
Frequency Distribution of Respondents Based on Menstrual Regulation

Menstrual	Frequenty	Precentage
Regular	66	52.4
Non Regular	60	47.6
Total	126	100

Based on Table 2 it is known that respondents who have regular menstruation are 66 respondents (52.4%) and those with irregular menstruation are 60 respondents (47.6%).

Regular and irregular menstruation is evidenced based on the menstrual cycle of respondents, where normal menstrual cycles are grouped into regular menstruation, and others are irregular, as described in the following table:

Table 4
Frequency Distribution of Respondents Based on Menstrual Cycle

Menstrual Cycle	Frequency	Precentage
< 21 days (polimenorea)	30	23.8
21-35 days (normal)	66	52.4
> 35 days (oligomenorea)	11	8.7
≥ 3 months (amenorea)	19	15.1
Total	126	100

The results of the study found that respondents who had menstrual cycle <21 days (polimenorea) as many as 30 respondents (23.8%), had menstrual cycle of 21-35 days (normal) of 66 respondents (52.4%), who

had menstrual cycle> 35 days Oligomenorrhoea) of 11 respondents (8.7%), and who had not experienced menstruation for ≥ 3 months (amenorea) as many as 19 respondents (15.1%).

3.3 Distribution of respondents by frequency of exercise

Table 6
Distribution of respondents by frequency of exercise

	Frequency	Percentage	Valid Percent	Cumulative Percent
1	15	11.9	11.9	11.9
2	77	61.1	61.1	73.0
3	14	11.1	11.1	84.1
4	2	1.6	1.6	85.7
5	4	3.2	3.2	88.9
6	11	8.7	8.7	97.6
7	3	2.4	2.4	100.0
Total	126	100.0	100.0	

Based on the above table can be explained that the frequency of the most exercise is 2 times a week that is 77 respondents (61.1%).

3.4 Relation of exercise frequency with menstrual cycle

Table 5
Menstrual Regulation Based on Frequency of Exercise In One Week

Frequency of Exercise	Menstrual Cycle				Total	%	*P*
	Regular	%	Non Regular	%			
1	14	21.2	1	1.7	15	11.9	0.000
2	48	72.7	29	48.3	77	61.1	
3	3	4.5	11	18.3	14	11.1	
4	1	1.5	1	1.7	2	1.6	
5	0	0	4	6.7	4	3.2	
6	0	0	11	18.3	11	8.7	
7	0	0	3	5.0	3	2.4	
Total	66	100	60	100	126	100	

Based on Table 5 it is known that from 15 respondents who do 1x exercise in a week mostly experienced regular menstruation that is 14 respondents. Then from 77 respondents who do 2x exercise a week mostly still have regular menstruation that is 48 respondents. However, from 14 respondents who did 3x training a week mostly started experiencing menstruation is not tertur that is as much as 11 respondents, and 2 respondents who do 4x exercise a week each 1 respondent who experienced regular and irregular menstruation. Then the exercises for 5x, 6x, 7x all experienced irregular menstruation of 4, 11, and 3 respondents.

Result of statistical test by using logistic regression test got value of P = 0.000, it shows that there is correlation between exercise frequency with menstrual cycle on Young Women in *Pencak Silat* Group of SMA Negeri in Purwokerto Region.

4. Discuusion

The result of the research mentioned that there were 11 respondents (8.7%) had oligomenorhea, 30 respondents (23,81%) had polimenorhea, 19 respondents (15,1%) had amenorrhea and 66 respondents (52,4%) Experienced eomenorhea (normal menstruation). The results of the study also explained that the most respondents were 77 people (61.1%) doing the exercise with frequency 2 times a week, 48 respondents (62.3%) had regular menstruation and 29 respondents (37.7%) had menstruation regular. Based on the results of this study more respondents have regular menstruation. This happens because most respondents do pencak silat

practice no more than 4x in a week with duration of practice time not more than 120 minutes every time do exercise.

Frequency of sports activities are said to be good if done for 3-5 times / week (Giriwijoyo, 2012). What is meant by the frequency of exercise / exercise is the amount of exercise per unit time. Sports exercises performed 3-5 times / week will have a meaningful effect on health. Exercise with the correct frequency will maintain the stamina and endurance of one's blood flow. Stamina will decline again after 48 hours of not exercising. Before stamina decreases again attempted to do physical exercise again (Giriwijoyo, 2012).

This suggests that excessive exercise, among others, seen from exercise frequency and duration of exercise leads to dysfunction in the hiothalamus which causes impairment in GnRH pulsatility that may inhibit FSH secretion. Such conditions may lead to delayed menarche, amenorrhea and menstrual cycle disruption (Asmarani, 2010). This is in accordance with the study of Homai et al (2014) which states that the nature and severity of menstrual symptoms depends on several things such as type of exercise, intensity, duration of exercise, and also the rate of development of the coach program.

The result of statistical test got P value = 0.000 which means there is correlation between exercise frequency with menstrual cycle at adolescent girl in Pencak Silat group of SMA Negeri in Purwokerto Region. The results of this study are in line with research conducted by Yani, 2016 which explains that there is a relationship between physical activity with menstrual cycle (p = 0,000) and in line also with research conducted by Asmarani, 2010 which explains that there is a relationship between duration and frequency of exercise Menstrual cycle (p = 0.002). Menstrual cycle disturbances such as oligomenorrhea or amenorrhoea may recover and return to normal by stopping or reducing exercise intensity and appropriate nutrition during strenuous exercise (Homai et al, 2014).

The weakness in this study is that researchers do not control the psychological and nutritional factors that can affect the menstrual cycle.

5. Conclusions

The results shows that the age of the youngest respondents was 15 years old and the age of the eldest respondents was 18 years. The median age of respondents was 16 with a standard deviation of 0.742.

Result of statistical test by using logistic regression test got value of P = 0.000, it shows that there is correlation between exercise frequency with menstrual cycle on Young Women in Pencak Silat Group of SMA Negeri in Purwokerto Region.

The suggestions that can be given is necessary to do further research with a larger sample size and consider the psychological condition and nutritional status of respondents.

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