

THE EFFECT OF PILATES EXERCISE TO HAMPER PRIMARY DYSMENORRHEA IN 18-21 YEARS OLD ADOLESCENTS

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Abstract

Dysmenorrhea is the manifestations of pain that appear during menstrual cycle. The symptom of dysmenorrhea is cramp in stomach that happen between 24 to 36 hours. The symptom will disturb the activity of woman. There are two kinds of dysmenorrhea; they are primary dysmenorrhea and secondary dysmenorrhea, Primary dysmenorrhea is experienced by 60-75% of young women. About 75% of women experience mild cramping or moderate intensity and the 25% of women feel severe pain. In Indonesia, the incidence of dysmenorrhea is about 64.25 (Santoso, 2008) [1]. Pilates exercise is a type of physical exercise focusing in strengthening muscle, training flexibility, muscle control, improving posture, and breathing. The study is done to know the effect of pilates exercise for hampering primary dysmenorrhea in 18-21 years old adolescents. The research method is quasi experimental with control group design. The respondents were divided into two groups. The first group was the treatment group that was trained to do pilates exercise for about four weeks and the second group was the control group with no treatment. The analytical statistic was conducted with SPSS by using Wilcoxon test and Mann Whitney test. The pilates exercise is considered effective to hamper dysmenorrhe in 18-21 years old adolescents. After using wilcoxon test in the treatment group, it was obtained that the value was 0.001; while, the value was 0.033 in the control group. By applying Mann Whitney test, it was obtained that the p value was 0.001, showing the existence of different influences between treatment group and control group for the increase of dysmenorrhea in 18-21 years old adolescents. The pilates exercise is effective to hamper menstrual pain in 18-21 years old adolescents.

Keywords: dysmenorrhe, pilates exercise, adolescent.

Presenting the Author's biography



Wahyuni is a lecturer of Physiotherapy Department, Faculty of Health Science at Universitas Muhammadiyah Surakarta. She has been teaching for about 18 years. She had done many researches and publications.

BACKGROUND

Reproductive health is the most important thing and should receive special attention, especially in adolescents. Teenage is the transition phase from childhood into adulthood. According to the Indonesian Central Statistics Agency (BPS) in 2010, the number of Indonesia population is 233 million and 26.8% of them or 63 million are teenagers who are

between 10 to 24 years old. One of the problems inflicting teens in puberty is menstrual pain. Menstruation is a physiological change, but sometimes the situation will be slightly uncomfortable. Bobak *et al.* [2] explained that menstruation is a periodic bleeding of the uterus, which usually takes about 14 days after ovulation. In some cases, menstruation can cause disruptions, for example dysmenorrhea. Dysmenorrhea is derived from the Greek ‘dys’ that means ‘disorder’ or ‘severe pain’ or ‘abnormality’, ‘meno’ means ‘moon’, and ‘rrhea’ means ‘flow.’ Therefore, the meaning of dysmenorrhea is menstrual blood that flow while on disorder or painful menstruation [3]. There are two kind of dysmenorrhea. The first one is primary dysmenorrhea and the second one is secondary dysmenorrheal. Primary dysmenorrhea is experienced by 60-75% of young women. About 75% of women have mild or moderate intensity of cramping and 25% of them have severe pain that will render them almost helpless. In Indonesia the incidence of dysmenorrhea is about 64.25% of all women; about 54.89% is primary dysmenorrhea and 9.36% of them is secondary dysmenorrhea[1]. Primary dysmenorrhea is menstrual pain with no abnormalities found. Therapy can be given to minimize the pain, for example through counseling, pain relief, and hormonal therapy [4]. In United States the incidence of dysmenorrhea is about 60%, 72% in Sweden, and 55% in Indonesia.

Menstrual pain is the pain at lower abdominal (especially around the middle abdomen, bottom and genitals and low back pain [5]. The complaints of menstrual pain usually are not only annoying but also are able to disturb the daily lives activities. A research conducted in the United States stated that dysmenorrhea is experienced by 30% -50% of women of reproductive age and 10-15% of them lose the opportunity to work, interfere with learning and other activities.

Women can do something to minimize the pain for example warm bath, abdominal stretching exercise and avoiding smoking [6]. According to the French [7] pain can be minimized by modification of lifestyle to cope dysmenorrhea by consuming low-fat diets, exercise, and stop smoking. The pain could also be lessened by taking supplements, drinking herbal medicine, acupuncture, acupressure, surgical therapy, TENS, and therapeutic horizon.

Based on the above opinion, it could be explained that exercise can reduce dysmenorrhea. Exercise is safe to use because it uses physiological processes. The new strategy to overcome dysmenorrhea is the provision of vitamin B1, B6, E, magnesium, omega 3, exercise, acupuncture and traditional Chinese medicine [8]. One of many kinds of exercise that could be practiced is pilates exercise. This exercise aims to improve flexibility, increase global muscle strength and endurance, emphasize spine, correct breathing, and the development of a strong core, improve coordination, balance. The benefit of pilates exercise is claimed to improve the activation of the abdominal muscles during athletic or activities of daily life [9].

METHOD

Subjects. The subjects were thirty healthy teenagers (age 18-21 years), which were divided into two groups. The first group is the treatment group and the second one is the control group. All subjects have experienced dysmenorrhea on the first day of menstrual period, do not take any pain killer, sedentary, and have normal menstrual cycle. All subjects provided informed consent prior to participation. Before the experimental trials, the subjects were tested for dysmenorrhe by using Numerical Rating scale (NRS).

Experimental protocol. Experimental sessions were conducted three times in a week, in the duration of three weeks, and every session lasted for 50 minutes. The treatment was done for three weeks. The post test of the study was done on the first day of the next menstruation cycle.

Statistical analyses. The data were evaluated for the first day of the next menstruation cycle. Wilcoxon test was applied to know the effect of pilates exercise to hamper primary menstrual pain in 18-21 years old adolescents on the treatment group and the control group. Mann whitney test was done to know the difference of the effect of pilates exercise between the treatment group and the control group.

RESULTS

Physical characteristics of the thirty subjects are presented in Table 1.

Table 1. The Characteristics of subjects

No	Characteristics	Treatment group	Control Group
1	<i>Age</i>	19.57	
2	<i>Weight</i>	55.33	50.53
3	<i>NRS</i>	4.87	4.53

Source: primary data

According to Table 1, it was found that the mean of age of the subjects was 19.57. This was considered as the productive age. The weight of the subjects were on the same level between the treatment group and the control group; moreover, the subjects in both groups had normal Body Mass Index (BMI).

Table 2 will present the analytical test.

Table 2. Analytical test

Analytical test	The group test	Z score	Sig (2-tailed)	Conclusion
Wilcoxon test	Treatment group	-3.497	0.001	H0 not receivable
	Control Group	-2.126	0.033	H0 not receivable
Mann Whitney test	Treatment – Control group	-3.597	0.001	H0 not receivable

Source: primary data

Both groups had significant level of Wilcoxon test; however, the treatment group had more significant value level compared to the control group.

DISCUSSION

From the results of the characteristics of respondents by age in both treatment and control groups in Tab. 1, the mean of age was 19.57 years old. Age is an important variable that affects pain. Age can affect the correlation with cognitive processes in the perception of pain. As age increases, tolerance of pain also increases [10].

Based on the statistical test by Wilcoxon test, it could be seen that pain decreased in the treatment group; on the other hand, it increased in the control group. Through Mann Whitney test it could be concluded that there were differences in the effect of Pilates Exercise to decrease primary dysmenorrhea between the treatment group and the control group. The difference in mean values obtained in the treatment group was 2.14 and in the control group - 0.54. This happened due to psychological factors that were difficult to control; therefore, the difference on the mean value was found negative on the control group. Psychological factors are very difficult to control especially because each person has their own stress originator, and they are definitely different. Therefore, when the exercise was done, it would have a positive effect. The results of research that had been done was also supported by a research conducted by Woo & McEneaney [8], which stated that exercise is safer to use in reducing pain due to the use of physiological processes.

In addition, research from Brown and Brown [11] also stated that exercises can reduce the symptoms associated with dysmenorrhea. Physical exercise has a relationship with a reduced level of muscle fatigue. Adolescents who experience dysmenorrhea will experience muscle cramps, especially in the lower abdomen that is cyclic due to a strong contraction and long on the uterine wall, causing muscle fatigue and physical inactivity; therefore, it is necessary to exercise to relieve the cramps. Increased abdominal muscle elasticity affects the levels of oxygen supply on every organ; hence, there is a decrease in pain because the supply of oxygen to each organ especially abdominal is fulfilled to the maximum level. Furthermore, when the prostaglandin is released simultaneously during menstruation, it could also result in reduced pain. Increased endorphin is shown to be associated with decreased pain, increased memory, improved appetite, sexual performance, blood pressure and respiration.

As the control group was not given any treatment, decreased pain due to psychological factors are difficult to control. Exercise is a factor that affects the menstrual pain scale. As increase metabolism occurs during exercise, it can improve blood circulation and fulfilled oxygen intake. Furthermore, the effect of frequent exercise is that the brain will produce endorphins which induce a relaxing effect which can reduce pain [12].

CONCLUSIONS

The data explained that the pilates exercise have good effect to hamper primary dysmenorrhea on 18-21 years old adolescents. Future studies should be conducted in order to investigate the effect of other treatments in hampering primary dysmenorrhea, such as psychological factors, TENS treatment, acupuncture, massage, aromatherapy, and so on.

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