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| **The Effect Of Endurance Training On Menstrual Cycle**  **Linda Desrianda Tamher1\*, Mustika Fitri2\*, Pipit Pitriani3\***  1Linda Desrianda Tamher : Sport Education Study Program, School of Postgraduate, Universitas Pendidikan Indonesia, Indonesia  2Mustika Fitri : Sport Education Study Program, School of Postgraduate, Universitas Pendidikan Indonesia, Indonesia  3Pipit Pitriani : Sport Education Study Program, School of Postgraduate, Universitas Pendidikan Indonesia, Indonesia | | | | |
| **Info Artikel**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *Article History :*  *Received Mei 2020*  *Revised Mei 2020*  *Accepted 2020*  *Available online 2020*   \_\_\_\_\_\_\_\_\_\_\_\_\_  *Keywords:*  *Endurance Training, Menstrual Cycle, & Obese Women* | | **Abstrak**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Tujuan dari penelitian ini untuk mengetahui pengaruh yang ditimbulkan dari olahraga daya tahan terhadap wanita obesitas. Desain penelitian yang di gunakan adalah pretest-posttest two treatment design. Subjek yang digunakan dalam penelitian ini sebanyak 22 orang wanita, dibagi menjadi 2 kelompok, kelompok Senam aerobik dan kelompok zumba. Penelitian ini dilakukan 3 kali dalam seminggu selama 12 minggu, dengan intensitas 65% - 85% berdasarkan denyut nadi maksimal. Siklus menstruasi didapatkan dengan teknik wawancara dan angket menstruasi. Hasil dari penelitian ini senam aerobik dan zumba tidak mempengaruhi siklus menstruasi. Kesimpulan penelitian ini olahraga daya tahan tidak mempengaruhi siklus menstruasi.  **Abstract**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  The aims of this study to examine the effect of endurance sport on the menstrual cycle for obese women. The design is a pretest-posttest two treatment design. This study used 22 samples of women, which divided into 2 groups, group aerobics dance, and group Zumba. This research was conducted 3 times a week for 12 weeks, with an intensity of 65% - 85% based on maximum heart rate. The menstrual cycle was obtained by interview and menStrual questionnaire. The result of this study is aerobic dance and Zumba didn't affect the menstrual cycle. The conclusion is no significant effect between endurance training on the menstrual cycle. | | |
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## INTRODUCTION

Obesity is increasing every year in the world (Aizawa & Helble, 2017). Obesity makes more disease until mortality (Talmor & Bruce, 2014). Obesity has an effect on the reproductive system for men and women (Pasquali, Patton, & Gambineri, 2007). More studies provided that women adults had a 40.8% risk for obesity compared to men adult 36.5% (Hales et al., 2018).

Obesity will increase to every woman in reproductive age (Lim, Han, Young, Hye, & Sook, 2019). 15 – 49 years is the fertility age for women (Kemenkes RI, 2018). But obesity can make infertility (Talmor & Bruce, 2014). Infertility can be predicted by seeing menstrual periods every month (Sermondade et al., 2019).

Menstrual period every woman is different depends on more factors behind it (Sermondade et al., 2019), seems like a fluctuating hormone, nutrition, stress, reproductive disorder, etc (Rakhmawati, 2012). The reproductive disorder causes obesity is oligomenorrhoea or amenorrhoea on reproductive age (Seif, Diamond, & Nickkho-amiry, 2015). Dysmenorrhea premenstrual syndrome (Sinaga et al., 2017).

Physical activity can decrease more chronic disease (Shin, Lee, & Belyea, 2018). It suggested for adolescence and adult for doing physical activity 60 minutes every day, with moderate intensity for decreased hypertension and obesity (Towner et al., 2019). Endurance training is focused on aerobic training with low intensity and long duration (Bompa & Haff, 2009). Aerobic training is walking, jogging, swimming, cycling, and aerobic dance (Hürter et al., 2019). The same with them now have a new attractive physical activity so the people love it and that is Zumba fitness (Samy et al., 2019).

Aerobic dance and Zumba is more popular physical activity for women (Tugusi, Manca, Bergamin, & Blasio, 2018). However, research that utilizes aerobic dance and Zumba on the menstrual cycle. This study aims to identify the effect of endurance training on the menstrual cycle. The researcher hypothesizes in 12 weeks the endurance training will improve menstrual period to normality.

## METHODS

#### **Design**

This study used an experimental design and the design is Pretest-Posttest Two Treatment Design. The sample is divided into 2 groups which the 2 groups got a different treatment. Group 1 aerobic dance and group 2 Zumba. All samples doing pretest before the first treatment and posttest after the last treatment.

#### **Participants**

#### The sample used in this study is 22 obese women at S Fitness Center Cihampelas who had BMI > 25. The divided technical is the A-B-A-B method because it hopes all samples homogenous.

#### **Sampling Procedures**

#### Purposive sampling is used in this study. Because researcher have criteria: active members at S Fitness Center, have a BMI > 25 kg/m2, 15-49 years old, love aerobic dance and Zumba, have a commitment and more spirit, cooperative, and have menstrual pain.

#### **Materials and Apparatus**

#### The instrument for this study used Quissionaire Menstrual Cycle. The first test the sample interviewed, after that the sample must answer the questionnaire menstrual cycle.

#### **Procedures**

The treatment procedures are all samples chosen by the researcher corresponding with the criteria. After got the samples 22 persons obese women, they are got a paper to answer the questionnaire. After that researcher divided the sample into 2 groups, group 1 aerobic dance, and group 2 Zumba.

The frequency of training 3 times every week in 12 weeks. Intensity 65% - 85% from maximum heart rate used manually typical. Training time 60 minutes, which divided into 10 minutes warm-up, 45 minutes main activity, and 5 minutes cool down. The movement increased every session, but after do pulse check and see all sample conditions.

After finished 12 weeks do the posttest to evaluate this treatment, same with pretest all samples got a paper to answer the questionnaire for the menstrual cycle. And after got the data researcher processing the data for analysis.

#### **Design or Data Analysis**

Statistical analysis for this study is used by Paired Sample T-Test analysis. Data analysis was helped by the software Statistical Package for Social Science (SPSS).

## RESULT

According to the result after doing pretest, treatment aerobic dance and Zumba 12 weeks, and posttest, the result data is :

Table 1. Mean And Standard Deviation For Aerobic Dance And Zumba

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Group | pretest | | posttest | | Paired sample T-Test | Sig. |
| Mean | Stdev | Mean | Stdev |  |  |
| Aerobic dance | 31 | 3.01 | 31 | 3.85 | 0.789 | 0.394 |
| zumba | 30 | 3.19 | 30 | 4.10 | 0.941 | 0.470 |

Table 1 explained that aerobic dance had average for pretest 31 and standard deviation 3.01, then after training aerobic dance average same with pretest is 31 and standard deviation 3.85. same as an aerobic dance group for Zumba group average pretest is 30 and standard deviation 3.19, then after training Zumba average same with pretest is 30 and standard deviation 4.10.

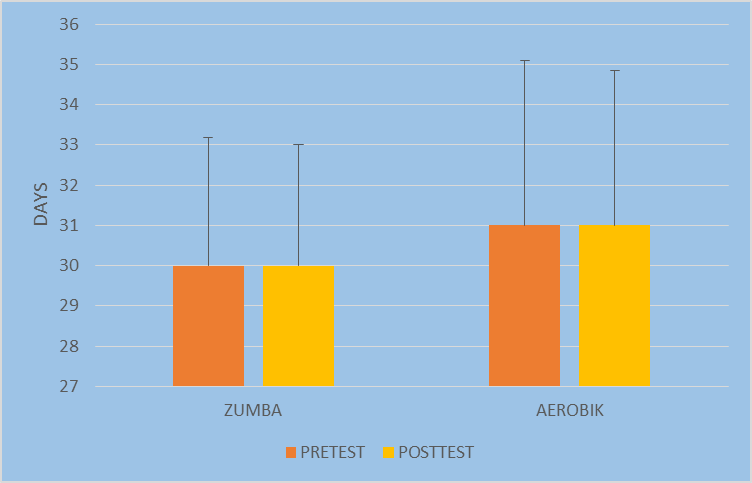


Fig. 1 Graphic data of Pretest and Posttest menstrual cycle from Aerobic Dance and Zumba group. (Data Mean ± SD)

According to figure 1, no increased or decreased menstrual cycle from two groups. Statistically, no significant difference between the two groups aerobic dance and Zumba for the menstrual cycle.

## DISCUSSION

## Based on the result endurance training for menstrual cycle that no significant different between aerobic dance and zumba for menstrual cycle. The study treatment was 12 weeks got decreased for bmi but not for menstrual cycle.

## The menstrual cycle influenced by fluctuating hormone (Sinaga et al., 2017), stress (Kandou, Tombokan, & Pangemanan, 2017), nutrition, and genetics (Simbolon, Sukohar, & Ariwibowo, 2016). According to that factors every sample have a different menstrual cycle. But if we see that individual sample they have an increasing menstrual cycle to normal category. Normally menstrual cycle is 28 -35 days, with 3 – 7 day bleeding (Purwoastuti & Wahyuni, 2015).

## Although the data indicated no increasing or decreasing menstrual cycle after doing the endurance training, they changed to be positive psychology, and decreasing dysmenorrhea primarily. Endurance training is a way to reduce pain during menstruation (Kannan, Chapple, Miller, Claydon-mueller, & Baxter, 2019). Because when doing aerobic exercise or endurance training can production of beta-endorphins decreased menstrual pain (Naugle, Fillingim, & Riley, 2012). Besides, endurance training increases anti-inflammatory cytokines that have a function to reduce pain (Leung, Gregory, Allen, & Sluka, 2016).

## Recommended for all women who menstruating, don't doing excessive intensity of circular movement (Kannan et al., 2019), because when menstruating occurs hormonal changes that cause weakness in the ligaments, especially ACL on the knee (Julian, Hecksteden, Fullagar, & Meyer, 2017), while the slowly exercise for a spin and cut movement like running(Kannan et al., 2019), with the long duration with low moderate until vigorous intensity (Bompa & Haff, 2009).

## This study can make a more effective for the menstrual cycle or dysmenorrhea primarily, but the limitations of researchers in carrying out such as short of time study, situation, and condition not conductive and can not predicted. So, suggested for the next study for menstrual cycle research is a hormone, nutrition, and genetics, because that factor can be predicted menstrual cycle.

## CONCLUSION

This study aim to explain about the effect of endurance training some like aerobic dance and zumba on menstrual cycle with 22 samples whict devided into 2 groups. The result of data analysis is no significant different between endurance training like aerobic dance and zumba can not give a changed for menstrual cycle, but just for decreasing desminorrhae.

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