

# Effectiveness of Aerobic Exercise with Video Media on Reducing Premenstrual Syndrome in Female Adolescents at SMA Negeri 8 Muaro Jambi

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## ABSTRACT

This study aims to determine the effect of aerobic exercise using audio video media on premenstrual syndrome in young women at SMA Negeri 8 Muaro Jambi. This research uses a type of quasi-experimental research (quasi-experimental design) with a Two groups Pre Test and Post Test with control design. The research sample consisted of 102 female teenagers at the Ministry of Health Jambi Health Polytechnic Department of Midwifery in 2023. Sampling used consecutive sampling technique. The research instruments used to conduct premenstrual syndrome research are audio video and the Shortened Premenstrual Assessment Form (SPAF) questionnaire. Research data was analyzed using the dependent t-test with a significance level of  $p < 0.05$ . The results showed that before doing aerobic exercise, the average PMS score for respondents was 17.39 (SD = 4.470), whereas after doing aerobic exercise, the PMS score decreased to 13.52 (SD = 2.606). Statistical analysis showed that there was a significant effect ( $p = 0.000$ ) between aerobic exercise using audio-visual media on reducing PMS symptoms. The research conclusion is that aerobic exercise based on audio-visual media is effective in reducing PMS symptoms in adolescent girls.

**Keywords:** Premenstrual syndrome, Video, Aerobics

## INTRODUCTION

The menstrual cycle is one of the most important indicators of the reproductive system function in women; however, this phenomenon is sometimes associated with signs and symptoms that cause physical and psychological problems for women (Erbil & Yücesoy, 2023). Premenstrual Syndrome (PMS) refers to a series of recurring symptoms that begin in the late secretory phase of the menstrual cycle (5–7 days before menstruation) and end in the follicular phase (2–4 days after menstruation) (King, 2020; Yücel et al., 2021). More than 150 symptoms have been identified for this syndrome, including abdominal cramps, boredom, bloating, breast pain and tenderness, acne, back pain and headaches, joint and muscle pain, weight gain, low energy (Nappi et al., 2022), changes in appetite and thirst, constipation, and increased heart rate (Jespersen et al., 2024). Due to the high prevalence of this syndrome and the role of women in families and society, treatment is considered important. The prevalence of these symptoms varies according to factors such as culture, attitudes, age, exercise, nutrition, and underlying diseases (Nexha et al., 2024).

Premenstrual Syndrome (PMS) is a collection of recurring physicals, psychological, and behavioral symptoms experienced by women during each luteal phase of the menstrual cycle (Gao et al., 2022). Currently, there is no exact global data on PMS prevalence. However, studies in Poland reported that 76.39% of women, and in Sri Lanka 65.7% of women were diagnosed with PMS according to ACOG criteria (Geta et al., 2020). In Indonesia, during 2007–2008, 95% of women experienced PMS, with 3.9% having moderate to severe symptoms. However, the prevalence in Indonesia is lower than in China, Japan, and Western countries (Dewi & Utami, 2022).

Exercise can reduce pain caused by PMS, while low physical activity may increase the severity of premenstrual symptoms such as tension, mood swings, and depression. The theory suggests that exercise can increase endorphin production, reduce estrogen and other steroid hormone levels that facilitate oxygen transport to muscles, lower cortisol levels, and improve psychological behaviors (Zehravi et al., 2023).

Physical activity is an appropriate method for treating PMS and is considered the best approach for women to reduce stress and balance brain chemical secretion. Physical activity appears to improve PMS symptoms by increasing endorphins and reducing adrenal cortisol, leading to increased pain tolerance, reduced anxiety and depression, and alleviation of other problems (Siminiuc & Țurcanu, 2023).

Research conducted by ElDeeb et al. (2020) reported that physiotherapy exercises, such as stretching and muscle relaxation performed in adolescents with menstrual pain, can reduce dysmenorrhea symptoms. Another study by Ravichandran & Janakiraman (2022) reported that regular aerobic exercise at moderate intensity can reduce or prevent certain menstrual disorders. Therefore, aerobic exercise can be used as a preventive approach to control dysmenorrhea and other menstrual disorders.

Exercise methods are a good way to instill certain habits and are also a means to acquire agility, precision, opportunities, and skills. Training methods are generally used to develop agility or skills based on what has been learned. This training should be maximized using the most supportive media, which is audiovisual media (López-Liria et al., 2021).

The use of technology and learning media is an effort to improve the quality of education or learning (Bekhatroh Rashed et al., 2023). Media in health education can be used as a tool to convey health messages. In the learning process, media refers to tools in graphic, photographic, or electronic forms to capture, process, and organize visual and verbal information (Santoso & Christiany, 2024). Aerobic exercise through audiovisual media can be accessible to female adolescents, guiding them to master aerobic exercise movements that function to reduce premenstrual syndrome.

Based on the background above, the author is interested in conducting a study entitled: “The Effectiveness of Aerobic Exercise with Audiovisual Media (Video) on Reducing Premenstrual Syndrome in Female Adolescents at SMA Negeri 8 Muaro Jambi.”

## **MATERIALS & METHODS**

This study employed a quasi-experimental design with a Two Groups Pre-Test and Post-Test with Control approach. The study involved two groups for comparison: a group of adolescents performing aerobic exercise using audiovisual media (treatment group) and a group of adolescents engaging in walking/jogging (control group).

The study was conducted at SMA Negeri 8 Muaro Jambi from May 2023 to September 2023. The population consisted of all 441 female students at SMA Negeri 8 Muaro Jambi, with a sample size of 44 students selected using stratified proportional random sampling.

Inclusion criteria for the sample were: female students of SMA Negeri 8 Muaro Jambi, having normal nutritional status,

experiencing PMS, having a regular menstrual cycle in the past three months, and willing to participate as research respondents.

Exclusion criteria included students with a history of chronic/systemic diseases (heart, liver, hypertension, lung, or kidney disorders), metabolic disorders (diabetes or thyroid disease), excessive, itchy, or odorous vaginal discharge, irregular menstrual cycles, and those consuming pain-relief medication.

The independent variable was aerobic exercise using audiovisual media, while the dependent variable was premenstrual syndrome (PMS). Data were collected using the Shortened Premenstrual Assessment Form (SPAF) questionnaire. SPAF is a standardized questionnaire with established validity and reliability. It has been used in numerous PMS studies both domestically and internationally and continues to be

utilized today. For this study, the SPAF questionnaire was translated by the Indonesian Translators Association before undergoing validity and reliability testing.

The questionnaire contains 10 questions regarding PMS symptoms experienced by respondents and consists of three subscales: pain (questions 1, 6, and 8), emotions (questions 2–5), and water retention (questions 7, 9, and 10). Each question is scored on a scale of 1 to 6 points.

Data analysis was conducted using a paired t-test (dependent t-test) to compare PMS symptoms before and after the intervention within each group. Additionally, multiple linear regression analysis was applied to assess the effect of aerobic exercise on PMS symptoms while controlling for potential confounding variables. A significance level of  $p < 0.05$  was used.

## RESULT

**Table 1. Respondent Characteristics**

Characteristic	Frequency	%
Age		
14 years	2	4.54
15 years	13	29.54
16 years	14	31.81
17 years	15	34.09
Menarche Age		
11 years	20	45.45
12 years	22	50
13 years	2	4.54
Duration of Menstruation		
4 days	1	2.27
5 days	5	11.3
6 days	6	13.6
7 days	15	34.09
8 days	11	25
Menstrual Cycle		
Irregular	4	9.09
Regular	40	90.9

Based on Table 1, the majority of respondents were 17 years old (15 respondents, 34.09%). The most common menarche age was 12 years (22 respondents,

50.0%). Most had a menstrual duration of 7 days (15 respondents, 34.09%), and the majority had a regular menstrual cycle (40 respondents, 90.90%).

**Table 2. Distribution of Premenstrual Syndrome in Female Adolescents Before Aerobic Exercise**

Premenstrual Syndrome	Mean	Median	Min	Max	Standard Deviation
Before Aerobic Exercise	17.39	17	11	27	4.470

Table 2 shows that before performing aerobic exercise, female adolescents had an average PMS score of 17.39, with a median

of 17, a minimum of 11, a maximum of 27, and a standard deviation of 4.470.

**Table 3. Distribution of Premenstrual Syndrome in Female Adolescents After Aerobic Exercise**

Premenstrual Syndrome	Mean	Median	Min	Max	Standard Deviation
After Aerobic Exercise	13.52	13	10	20	2.606

Table 3 shows that after performing aerobic exercise, female adolescents had an average PMS score of 13.52, with a median of 13, a

minimum of 10, a maximum of 20, and a standard deviation of 2.606.

**Table 4. Effect of Aerobic Exercise on Reducing Premenstrual Syndrome in Female Adolescents**

Dysmenorrhea Pain Level	N	Mean	SD	Sig.
Before Intervention	44	17.39	4.470	0
After Intervention	44	13.52	2.606	

Based on Table 4, among the 44 respondents, PMS symptoms showed a significant change after aerobic exercise. The mean pain level decreased from 17.39 before the intervention to 13.52 after aerobic exercise. The p-value was 0.000, indicating that aerobic exercise had a significant effect on reducing premenstrual syndrome in female adolescents at SMA Negeri 8 Muaro Jambi in 2024.

## DISCUSSION

Menstruation is a natural process that occurs in women. It is a regular bleeding from the uterus, indicating that the reproductive organs are functioning properly. Menstruation is characterized by periodic bleeding as an integral part of a woman's biological function throughout her life cycle (Gudipally & Sharma, 2023).

Every woman has the potential to experience premenstrual syndrome (PMS) to varying degrees. Women with PMS experience physical, psychological, and behavioral changes, as well as interpersonal problems and disruptions in daily activities. PMS consists of a collection of symptoms that cause physical discomfort or pain. Management strategies for PMS include a balanced diet (low in salt and caffeine), regular exercise or gymnastics, vitamin supplementation, and counseling (Takeda, 2023).

According to the researcher's assumption, the symptoms of PMS vary among women; some experience them inconsistently, while others may not feel symptoms in the following month. PMS can significantly interfere with women's daily activities. The study recommends that female adolescents actively seek accurate information to take preventive and management measures against PMS. Schools should also actively provide reproductive health education, particularly regarding PMS, as a strategy to prevent or reduce the risk of symptoms.

The reduction in PMS symptoms experienced by adolescents in this study was due to their compliance with the researcher's instructions and their motivation to reduce discomfort. The intervention provided was aerobic exercise performed four times per week for 30 minutes per session.

Aerobic exercise can relax tense muscles and help prevent or reduce back pain and discomfort in the pelvis and abdomen. This aligns with theory suggesting that aerobic exercise increases endorphin levels, lowers estrogen and other steroid hormones, enhances oxygen transport to muscles, and produces endorphins—brain-derived compounds similar to morphine that can reduce pain and induce euphoria (a feeling of happiness). Some sources describe aerobic exercise as part of a lifestyle modification package. Regular exercise

improves comfort and restores self-confidence.

Aerobic exercise is one of the recommended physical activities. Several studies indicate that regular aerobic training offers many benefits, including improved cardiovascular function, increased bone density, and reduced stress and premenstrual symptoms. Research shows that physical activity decreases renin activity and increases estrogen and progesterone levels. This, in turn, reduces serum aldosterone levels and sodium and water reabsorption, thereby decreasing edema and improving physical symptoms (Ravichandran & Janakiraman, 2022).

Based on the study results, among the 44 respondents, PMS symptoms showed significant improvement after the aerobic exercise intervention, particularly in the reduction of pain levels. These findings align with Ravichandran & Janakiraman (2022), who reported a significant effect of aerobic exercise on PMS.

Aerobic exercise affects the hypothalamic-pituitary process, stimulating the secretion of GnRH, which increases progesterone levels. Progesterone influences water retention and the central nervous system, so higher levels of this hormone reduce PMS symptoms, especially edema, mood swings (anger, sadness, crying), lack of concentration, and anxiety. Aerobic exercise also increases endorphin levels in the body. Endorphins have analgesic effects on the nervous system; therefore, higher endorphin levels reduce PMS symptoms, particularly abdominal pain, mood instability, depression, migraines, anxiety, behavioral changes, irritability, and feelings of anger (Saglam & Orsal, 2020).

## CONCLUSION

Before performing aerobic exercise, female adolescents experienced premenstrual syndrome with a mean score of 17.39, a median of 17, a minimum of 11, a maximum of 27, and a standard deviation of 4.470. After performing aerobic exercise, the mean PMS score decreased to 13.52,

with a median of 13, a minimum of 10, a maximum of 20, and a standard deviation of 2.606.

These results indicate that aerobic exercise had a significant effect on reducing premenstrual syndrome in female adolescents at SMA Negeri 8 Muaro Jambi.

## Declaration by Authors

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**Conflict of Interest:** The authors declare no conflict of interest.

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