



Correlation Between Premenstrual Syndrome (PMS) and Aquatic Activities in Physical Education at High School Student Pasundan 2, Bandung City

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Abstract

Abstract This study aims to explore the impact of aquatic activities on Premenstrual Syndrome (PMS) symptoms in female students at High School Pasundan 2 Bandung City. The method used in this study was a quasi-experimental with a Pretest-Posttest Control Group design, this study involved 70 female students aged 15-17 years who were divided into two groups, namely the experimental and control groups. The experimental group carried out aquatic activities for three sessions, while the control group did not receive any treatment. PMS symptoms were measured using SPAF, and aquatic activity assessments were carried out through observation sheets. The results of the paired t-test showed a significant decrease in PMS symptoms in the experimental group ($p = 0.000$). The independent t-test also revealed a significant difference between the experimental and control groups ($p = 0.000$). Most female students were in the Good to Very Good category of aquatic activities. The conclusion of this study is that aquatic activities are proven to be effective in reducing PMS symptoms and can be used as a non-medical intervention option in the context of Physical Education learning.

How to Cite

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INTRODUCTION

Women have incredibly complex bodies. Throughout their lives, they experience various anatomical, physiological, and reproductive developmental processes. This process begins in childhood and continues as they grow into adolescence and ultimately adulthood. The beginning of this development is usually marked by the onset of menstruation, which occurs at the end of puberty in adolescence. From then on, all anatomical, physical, and reproductive organs collaborate to ensure the proper functioning of a woman's reproductive system. (Aswan & Ramadhini, 2020). In women, puberty follows aspect development reproduction which is marked by the beginning of menstruation (menarche). As big woman age fertile experience discomfort physical or dysphoria in the weeks before menstruation (Ussher, 2014).

According to Navia (2024) Premenstrual syndrome (PMS) is disturbances in the luteal phase of the cycle menstruation, disorders the general occurs in women. Premenstrual Syndrome (PMS) is a series symptom physical, emotional, and behavioral problems experienced by some big women in the luteal phase of the cycle menstruation, usually ongoing One until two Sunday before menstruation. One of the theory For explain The mechanism of PMS is that system endocrine, reproductive, and serotoninergic united For arrange behavior individual (Maria et al., 2006). Symptoms that appear can varies, starting from from painful muscles, fatigue, to change atmosphere quite a dramatic heart. Some the most common and severe PMS symptoms experienced teenager Woman including depression, irritability anger, moodiness, and incompetence control emotions. Symptoms physique the most frequent experienced is a feeling of stomach felt full (bloating), and painful head (Nurbaiti & Noerfitri, 2023). Premenstrual Syndrome (PMS) is certainly can bother activity daily woman. However If a woman understand about PMS as well as method handling, possibly the impact caused No will too Serious.

In a way In general, Premenstrual Syndrome (PMS) can overcome through structured and regular exercise. Doing movement body in a way repetitive with follow rule certain can help increase fitness physical and mental (Nainar et al., 2021). Physical education in schools aim For improve physical health, skills motoric, and instill pattern life healthy among students. One of them frequent activities done is water activities, such as swimming, which has diverse benefits. Activities

activity swimming is also possible done before menstruation and during menstruation so that make flow blood muscles of the uterus become smooth and painless can resolved (Nainar et al., 2021).

Based on provisions issued by the Ministry of Health of the Republic of Indonesia (2013) frequency exercise sport can done 3-5 times in a week with 20-30 minutes (Pertiwi, 2018). Activity This can stimulate expenditure functioning endorphin hormones help reduce symptoms that appear during period said. Endorphin is one of the reason Premenstrual Syndrome (PMS), endorphins play a role in body For respond euphoria and pain. Therefore that, exercise can trigger endorphin production, which in turn can help calm feeling We (Elvira, 2010).

Research conducted by Nashruna in (2012), which is quoted in (Estiani, K., & Nindya, 2018), shows that a routine woman exercise tend experience more symptoms of premenstrual syndrome A little compared to with women who don't exercising or only once in a while exercise. In addition, exercising in water also stimulates release of endorphins, hormones that can increase atmosphere heart and reduce stress , which also becomes symptom common common experienced during PMS. However, still There is limitations understanding between students and staff educator about influence Premenstrual Syndrome (PMS) against participation female students in activity aquatic, as well as potential benefits that can be obtained obtained from activity the for students who experience PMS.

Therefore that, it is necessary done study more carry on For reveal connection between PMS and activity aquatic in education physical education in schools. Research This expected can give more insight deep as well as become guidelines for education teachers physical in designing activity more sports inclusive and adaptive, especially For student women who face PMS problems. The purpose of study This is identify gap existing research as well as give recommendation For study advanced or implementation activity aquatics in education jasmine as method alternative manage PMS symptoms.

From the description above, researchers interested in doing study about Correlation between Premenstrual Syndrome (PMS) and activities aquatic in education physical education in High School Pasundan 2 Bandung City, especially for grade X student aged between 15-16 years, because many students who have PMS symptoms and felt need to know symptom What

only that affects the occurrence of premenstrual syndrome as efforts to reduce impact negative PMS against performance academic and welfare student women and can done treatment or prevention more continue. This is the basis for interest researchers to conduct study.

METHOD

This research is a quantitative research method. Quantitative research is a study method based on the philosophy of positivism, used to examine specific populations or samples. Research that focuses on measurement objective from phenomenon social in a way collect and analyze numerical data as well as apply test statistics (Ali, M., & Asrori, 2018).

The research design applied in studies this is the design quasi experiment use Pre-Test and Post-Test with groups Control Group Design. This design made to assess activities something treatment by means of compare pretest and posttest results between groups that experience treatment and the group that does not. Thus, it can known what is the activity program aquatic influence PMS symptoms. Data analysis in study This was carried out by utilizing the Statistical Package for the Social Sciences (SPSS) as tools for testing differences and impacts from activities aquatic to signs of Premenstrual Syndrome (PMS).

Population in research is s istu class X at High School Pasundan 2 Bandung City which consists of from four classes, namely classes X-1, X2, X3, and X4 with a total of 70 students in the age range of 15-16 years. The population This chosen Because female students is at in group age teenagers who are biological currently experience phase active in cycle menstruation and vulnerability to symptom Premenstrual Syndrome (PMS). Samples for research This obtained by using technique purposive sampling, which is the selection sample based on criteria specifics related to the objectives research. Of the 70 female

students, 35 female students from class X-1 and X2 are selected as group experiment, while 35 female students from class X-3 and X-4 become controlGroup.

Table 1. Research Design

Group	Pre-test	Treatment	Post-test
Experiment	Y ₁	X	Y ₂
Control	Y ₁	-	Y ₂

Information :

Y1 : PMS measurement (before treatment)

Y2 : Treatment in the form of aquatic activities

X : PMS measurement (after treatment)

Instruments used in study This consists of from two type tool main, namely tools for measuring Premenstrual Syndrome (PMS) and instruments measurement activity aquatic. PMS measurements were carried out use Shortened Premenstrual Assessment Form (SPAF) which consists of out of 10 questions about symptoms of Premenstrual Syndrome (PMS), so that you can evaluate students who feel signs of premenstrual syndrome (Lestarini, 2019). Instrument the second is a questionnaire activity aquatic, to assess level involvement female students in activity aquatics in physical education lessons. Instruments arranged in form sheet observation for engineering swim style free for beginners from Sundan & Haga (2023), and effectiveness exercise aquatic support the need observation quality implementation activity aquatic from Barker AL, Talevski J, Morello RT, Brand CA, Rahmann AE (2014).

There is a number of type variables, namely variables independent variable dependent variable control, and moderator variables, each of which has its own different functions and relationships in context study (Hafizah et al., 2025). Following explanation short about variables in study this is so that it is more easy to understand **Table 2.**

Table 2. Definitions Operational Variables

Variables	Type	Operational Definition	Measurement Indicators	Instrument
Aquatic Activities	Independent Variable	A series of physical activities carried out in water that involve body movements to improve physical fitness.	Frequency of swimming, duration of training, activeness in physical education lessons	Aquatic activity observation sheet
Premenstrual Syndrome	Dependent Variable	Physical, emotional and behavioral symptoms that appear before menstruation	Symptoms of premenstrual syndrome (based on SPAF)	Shortened Premenstrual Assessment Form (SPAF) Questionnaire
Premenstrual Syndrome	Dependent Variable	Physical, emotional and behavioral symptoms that appear before menstruation	Symptoms of premenstrual syndrome (based on SPAF)	Shortened Premenstrual Assessment Form (SPAF) Questionnaire

RESULTS AND DISCUSSION

Based on measurements taken regarding Premenstrual Syndrome (PMS) in 70 female students class X at High School Pasundan 2 Bandung City, obtained description distribution divided PMS levels become category mild, moderate, and severe. The analysis carried out show that most of female students is at in moderate PMS category, namely as many as 47 female students (67.1%). Findings This indicates that majority respondents experience quite PMS symptoms influence activities everyday, but Not yet to the level required handler intensive medical care.

Table 3. PMS Measurement Results

Premenstrual Syndrome (PMS)	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Light	17	24.3	24.3
	Currently	47	67.1	91.4
	Heavy	6	8.6	100.0
	Total	70	100.0	100.0

Table 4. Distribution Frequency Activities Aquatic

Aquatic Activities Category	Amount	%	Average
Not enough	-	-	15-24
Enough	10	28.6	25-34
Good	21	60	35-44
Very good	4	11.4	45-50
Total	35	100	38

Of the 35 female students, 21 female students (60%) are included in Good category, 10 female students (28.6%) are in the good category Enough, and 4 female students (11.4%) are classified as in category Very Good. Nothing students who are in Less category. Based on results observation to activity aquatics that are implemented in three session learning, obtained description about ability female students in do activities physically in the water. In Overall, the average score obtained is 38, so including in Good category.

Based on the results of the statistical test using SPSS, it can be seen that the significance value obtained is > 0.05 , namely the pre-test is 0.710 while the post-test is 0.796. Because all mark significant more big from 0.05, then can concluded that the pretest and posttest data for Premenstrual Syndrome (PMS) are normally distributed. Thus, the analysis to be continued using Paired Samples t-test.

The results of the Paired Samples t-test show mark significance $0.000 < 0.05$, so can concluded that there is significant difference between

PMS pretest and posttest scores. The mean difference of 3.829 indicates PMS scores experienced decline after follow activities or interventions study.

95% confidence interval is in the range of 2,892 to 4,766, which means consistent and non-stop PMS reduction happen in a way coincidence. The calculated t value of 8,304 shows size changes that occur after treatment. The more big t value, the more strong difference between pretest and posttest.

Based on the results of the statistical test on the normality test (group control and experiment), it can be seen that the significance value obtained is > 0.05 , namely the pre-test control is 0.202, the post-test control is 0.553, the pre-test experiment is 0.710, while the post-test experiment is 0.796. Thus, all variables can said to be normal and good data that is data distribution is normal or close to normal. So that can parametric tests were performed because the data has been fulfil assumptions normality. Parametric tests were performed namely using independent sample t-test to measure significant difference between group average value control and group experiment.

This test used to find out whether the group posttest experiments and groups control different in a way significant, after treatment (aquatic activity) was given to the group experiment. Based on Independent Samples t-test results obtained mark significance amounting to 0.000, which is more small of 0.05. This is show that there is significant difference between group posttest results control and group experiment. The difference between the two averages group amounting to 5,943 points, with the posttest value of the group experiment more tall compared to group control. Thus, it can concluded that aquatic activities provide real impact to improvement results learning or ability measured in a group experiment.

Result of study This show that the group that follows activity activities aquatic as group experiment show significant development If compared to with control group. This implies that activity aquatic seen succeed in influence condition subtraction Symptoms of Premenstrual Syndrome (PMS). Findings This support hypothesis that water activities can become beneficial non-pharmacological interventions.

Findings in literature international, reviews latest by Ayyub (2025) show that activity physique including aerobics, resistance, and exercise like yoga can in a way significant reduce symptom physical, emotional, and behavioral

problems associated with Premenstrual Syndrome (PMS). These results confirm that sports , including those done in water, can reliable as approach safe and natural for PMS management without dependence drug.

A meta -analysis conducted by Pearce (2020) show that aerobic exercise during at least 8 weeks can give significant decrease in score as a whole Premenstrual Syndrome and its aspects physical, psychological, and behavioral. In this case this, activity program aquatic with arrangement sessions and levels the intensity that has been study This set is a variation from exercise aerobic and resistance which are theory can produce similar effect : increase flow blood, endorphin release, relaxation muscles, and hormonal regulation that can relieve symptoms that appear before menstruation.

Additionally, a narrative review comparing various types of exercise found that regular exercise can reduce fatigue, improve mood, and alleviate physical symptoms such as cramps and breast tenderness, symptoms frequently reported by women experiencing PMS (Sanchez et al., 2023). The findings of this study, which showed significant improvements in the intervention group, reinforce the notion that water activities are an appropriate and suitable form of exercise for adolescent girls.

Thus, the findings of this study provide concrete evidence that water activities carried out in a planned, structured manner, and accompanied by an instructor/teacher can be an effective non-medical option to help female students overcome the symptoms of Premenstrual Syndrome (PMS).

CONCLUSION

Study This find that involvement in water activities have significant impact in reduce symptom Premenstrual Syndrome (PMS) in female students at High School Pasundan 2 Bandung City. Data analysis results show improvement in scores posttest in groups experiment compared to with pretest , while group control No show significant changes . In addition , most of the female student who are in the age range of 15-16 years, fall into the Good to Very Good category in aquatic activities, which indicates that Exercise in water can implemented with effective.

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