



COMPARATIVE STUDY ON SELECTED HEALTH RELATED PHYSICAL FITNESS VARIABLES BEFORE AND DURING MENSTRUAL CYCLE

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Abstract: Aim: To compare on selected health related physical fitness variables before and during menstrual cycle. Introduction: Physical education an integral part of the total education process, is a field of endeavor that has its aim the improvement of human performance through the medium of physical activities that have been selected with a view to realizing this outcome. **Health related physical fitness having exercises that help to improve physical health, which involve cardiorespiratory endurance, muscular endurance, muscular strength and flexibility.** Sports and menstruation are another important aspect as far as women fitness and health is concerned. Initially in the early years it would depend only upon the information derived from the girl's mother and friends but later on one finds that it is basically the attitude that deals with problem of menstruation.

A woman who would like to continue with her fitness regime shall carry on the programmed no matter what, the inconveniences and pains caused due to menstruation shall become a secondary factor. Every woman has her own pain threshold, at which point she decides whether she will continue with her training or not. Purpose of the study: To find out the comparative on selected health related physical fitness variables before and during menstrual cycle. Procedure: for the present study 20 women of LNIFE (B.P.Ed. 1st year), Gwalior (M.P.) were selected randomly as the subjects for the study. The variables selected for the presented study were cardio respiratory endurance, flexibility, muscular endurance and muscular strength. The data was collected through the pre-test and post-test. For the study, pre-test data was taken one week before the menstrual cycle and post-test data was taken during the 2nd day of menstrual cycle. Statistical technique: for comparing pre-test and post-test (cardio respiratory endurance, flexibility, muscular endurance and muscular strength), descriptive analysis and paired "t" test were applied at the 0.05 level of significance. Result/Conclusion: the result of the study indicated that there was no significance difference among pre-test and post-test of cardio respiratory endurance, flexibility, muscular endurance and muscular strength as the 'p' value were 0.332, 0.920, 0.208, 0.885 and 0.615 which is more than 0.05.

Keyword: menstrual cycle, C.R.E, flexibility, muscular endurance and strength.

Introduction In games and sports systematic and scientific training method play a vital role for a sport person. Health related fitness is also important for increasing the higher level of performance.

Involving sports, games, gymnast, dance and through some human movement many objectives are achieved by the means of big muscle activities which can be called as physical education.

Physical activity also enhances the metabolic fitness that can reduce risk of a variety of health problem. When metabolic system of the body does not work effectively it can lead to risk of chronic disease such as diabetes and heart disease.

Physical fitness is an ability to perform daily activities which is achieved through proper physical activity, proper nutrition and enough rest.

Health related physical fitness having exercises that help to improve one's physical health, which involve cardiorespiratory endurance, muscular endurance, muscular strength and flexibility.

In today's generation every man needs physical movement to live in healthy way through different ways. Exercises don't have any substitution; it is important for today and future as well.

Sports and menstruation are another important aspect as far as women fitness and health is concerned. Initially in the early years it would depend only upon the information derived from the girl's mother and friends but later on one finds that it is basically the attitude that deals with the problem of menstruation. A woman who would like to continue with her fitness regime shall carry on the programmed no matter what, the inconveniences and pains caused due to menstruation shall become a secondary factor. Every woman has her own pain threshold, at which point she decides whether she will continue with her training or not.

The normal reproductive years of the female are characterized by monthly rhythmical changes in the rate of secretion of the female hormones and corresponding physical changes in the ovaries and other sexual organs.

Menstruation is also called menstrual bleeding, menses, catamenia or a period. The flow of menses normally serves as a sign that a woman has not become pregnant. However, this cannot be taken as certainty, as a number of factors can cause bleeding during pregnancy, some factors are specific to early pregnancy, and some can cause heavy flow. During the reproductive years, failure to menstruate may provide the first indication to a woman that she may have pregnancy.

Eumenorrhea denotes normal, regular menstruation that last for a few days usually 3 to 5 days, but anywhere from 2 to 7 days in considered normal. The average blood loss during menstruation is 35 millilitres with 10 to 80 ml considered normal, because this blood loss, women are more susceptible to iron deficiency than men. An enzyme called plasmin inhibits clotting in the menstrual fluid.

Saunders reports that menstruation usually starts between the ages of 11 to 14 and continue to the forties and fifties. The shedding of the lining of the uterus in women and pubescent girls is typically taking place 28 days. The lining is made up of tissue and blood and is needed to nourish a fertilize egg, the lining expelled from the uterus.

3.1 Population and Sample

For the purpose of the Study, 20 female students selected randomly from Lakshmbai National Institute of Physical Education, Gwalior participated in the study. The selected subjects of the study were all B.P.Ed. 1st Year Students.

The requirement of the study was explained to all the subjects. The subjects were requested to participate in testing procedure whole heartedly with utmost sincerity in the present study, and all the subjects voluntarily agreed to undergo the testing programme.

3.2 Data and Sources of Data

The data was collected through the pre-test and post-test. For the study, pre-test data was taken one week before the menstrual cycle and post-test data was taken during the 2nd day of menstrual cycle

3.3 Theoretical framework

On the basis of review of literature, expert opinion, facilities and instrument availability, scholar's own understanding of the problem and keeping in mind the specific purpose of the study i.e. to find the comparison on selected health related fitness variables on before and during menstrual cycle. The following are the selected variables:

Health Related Variables

1. Flexibility
2. Cardiorespiratory endurance
3. Muscular strength
4. Muscular endurance

I. RESEARCH METHODOLOGY

The methodology section outlined the plan and method of how the study was conducted. This includes Universe of the study, sample of the study, Data and Sources of Data, study's variables and analytical framework. The details are as follows:

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3.4 Statistical tools and econometric models

In order to find out the significance of means of pre-test and post-test of comparative study group, paired 't' test was used and compared the selected health related physical fitness variables of menstrual cycle at 0.05 level of significance.

3.4.1 Descriptive Statistics

IV. RESULTS AND DISCUSSION

4.1 Results of Descriptive Statistics of Study Variables

Paired Comparison of Means for Cardio Respiratory Endurance Between Pre and During Menstruation

	Paired Differences		T	df	Sig. (2-tailed)
	95% Confidence Interval of the Difference				
	Lower	Upper			
Pre menstruation During menstruation	177.30	64.99	1.010	19	.332

It is evident from Table 2 that there is no significant difference between pre and during menstruation tests on cardio respiratory endurance in female subjects as the obtained p value was 0.332 which is higher than 0.05, indicating that there is no significant change in cardio respiratory endurance before and during menstruation.

Paired Comparison of Means for Flexibility Between Pre and During Menstruation

	Paired Differences		T	df	Sig. (2-tailed)
	95% Confidence Interval of the Difference				
	Lower	Upper			
Pre menstruation During menstruation	1.95	2.15	0.102	19	.920

It is evident from Table 4 that there is no significant difference between pre and during menstruation tests on flexibility in female subjects, as the obtained p value was 0.920 which is higher than 0.05, indicating that there is no significant change in flexibility before and during menstruation.

Paired Comparison of Means for Muscular Endurance Between Pre and During Menstruation

	Paired Differences		T	df	Sig. (2-tailed)
	95% Confidence Interval of the Difference				
	Lower	Upper			
Pre menstruation During menstruation	3.90	0.90	1.30	19	.208

Table 6 shows that there is no significant difference between pre and during menstruation tests on muscular endurance in female subjects as the obtained p value was 0.208 which is higher than 0.05, indicating that there is no significant change in muscular endurance before and during menstruation.

**Paired Comparison of Means for Leg Strength
Between Pre and During Menstruation**

	Paired Differences		T	df	Sig. (2-tailed)
	95% Confidence Interval of the Difference				
	Lower	Upper			
Pre menstruation During menstruation	10.71	9.02	.187	19	.855

It is evident from Table 8 that there is no significant difference between pre and during menstruation tests on leg strength in female subjects as the obtained p value was 0.855 which is higher than 0.05, indicating that there is no significant change in leg strength before and during menstruation.

**Paired Comparison of Means for Back Strength
Between Pre and During Menstruation**

	Paired Differences		T	df	Sig. (2-tailed)
	95% Confidence Interval of the Difference				
	Lower	Upper			
Pre menstruation During menstruation	5.70	9.24	.516	19	.615

It is evident from Table 10 that there is no significant difference between pre and during menstruation tests on back strength in female subjects as the obtained p value was 0.615 which is higher than 0.05, indicating that there is no significant change in back strength before and during menstruation.

Figures and Tables

Place figures and tables at the top and bottom of columns. Avoid placing them in the middle of columns. Large figures and tables may span across both columns. Figure captions should be below the figures; table captions should appear above the tables. Insert figures and tables after they are cited in the text. Use the abbreviation “**Fig.1**” in the text, and “**Figure 1**” at the beginning of a sentence.

Use **10 point Times New Roman** for figure labels. Use words rather than symbols or abbreviations when writing figure-axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization,” or “Magnetization, M”, not just “M”.

Table 1 Table Type Styles

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