

Influence of Menstrual Cycle Phases on Health Related Physical Fitness Components of Players

Iti Chakraborty

ABSTRACT

The purpose of the study is to compare Health Related Physical Fitness Components of Cardio-respiratory endurance, Muscular Strength, Muscular Endurance, Flexibility and Body Composition among Menstruation Cycle Phases. The subjects Menstrual Cycles were counted from the first day of menstrual flow and divided into four phases, namely phase A (Menstrual phase – data collected on 3rd day), phase B (Follicular phase – data collected on 9th day), phase C (Ovulation phase – data collected on 14th day) and phase D (Luteal phase – data collected on 25th day). Fifteen subjects were selected randomly from Basketball and Volleyball games. One way repeated measure of ANOVA was employed and result of the study proved that there were significant differences between different menstrual phases among players in the selected health related physical fitness variables Cardio respiratory endurance, Muscular Strength and Muscular Endurance. However there was no significant difference in health related physical fitness variables, Flexibility and Body Composition.

KEY WORDS: Universal Religion

Introduction:

Women have certain physiological and anatomical differences, which may affect their performance in sports when compared with men. Many factors were different between men and women such as body build, body composition, strength, endurance, motor ability etc. The main factor is menstruation. The menstrual cycle is a recurring cycle of physiological changes that occurs in the females. The average length of the menstrual cycle is 28 days.

Iti Chakraborty, Whole Time Contractual Teacher, Dept. of Physical Education, Raja Narendralal Khan Women's College, Midnapore, West Bengal.

The length of the menstrual cycle is calculated from the first day of the period to the day before the next period begins. The menstrual cycle may be divided into several phases and the length of each phase varies from women to woman and cycle to cycle. The research scholar in the present study has made an influence of menstrual cycle phases on health related physical fitness components of players.

Menstrual Cycle and Length of Phases

Name of the Phases	Days
Menstrual Phase	1 to 4
Follicular Phase	5 to 13
Ovulation Phase	14
Luteal Phase	15 to 28

Hypothesis

It was hypothesized that there would be significant differences in Health Related Physical fitness components, namely Cardio respiratory endurance, Muscular Strength, Muscular Endurance, Flexibility and Body Composition during Menstrual Cycle Phases.

Methodology

Fifteen basketball and volleyball players were selected as subject form Bolpur Town club, Bolpur Santiniketan, West Bengal. The age of the subjects ranged between 18-22 years.

Assessment of Health Related Physical Fitness

To test the Health Related Physical Fitness of the subjects, the standard tests were used. The administration of each item is described below.

- a) **Three minutes Step-Up Test:** The purpose of this test was to measure aerobic capacity, Cardio respiratory endurance in mass testing situation. A twelve inches high bench, stopwatch and stethoscope were used to conduct this test. The subject steps, up, up down, down were explained by researcher before the performance. The subject listens to the instructions to become familiar with the instruction and begins when ready and the time started. These continue for 3 min. Every minute there were alert by tester. After the final step down, the subject allowed sitting down and immediately the heart

rate was counted for 15 sec. Timing of 15 sec was converted into 1 min. One minute heart rate was the score of the test.

- b) Push-Up Test:** The purpose of this test was to measure the strength of the upper body. Gymnastic mats were used to conduct this test. The subject took prone lying position on the ground with the hands under the shoulders and fingers stretched, legs straight and parallel with comfortably apart and the toes tucked under the feet. On the command 'go' the subject performed push ups with arms and extended it completely. Then the subject lowered her body using the arms until it come to 90 degree angle and upper arms were parallel to the ground. The action was repeated as many times as possible. Total number of correct push-ups was recorded as the score of the test.
- c) Sit-Ups Test:** The purpose of this test was to measure the abdominal endurance. Gymnastics mats were used to conduct this test. The subject took supine lying position with bent knees; feet flat about 18 inches from the buttocks and the hands touching the side of the head. A partner hold the subject feet as the exercises performed. The subject touched the elbow to the alternate knee with the each sit-up. The subject performs as many sit-ups in one minute as possible. The number of correct repetitions in one minute was recorded as the score.
- d) Sit and Reach Test:** The purpose of the test was to measure the trunk flexibility. Yardstick and measuring steel tape were used to conduct the test. Place the yardstick on the floor and put an 18 inch piece of tape across the 15 inch mark on the. The tape should secure the yardstick to the floor. The subject sits with the 0 end of the yardstick between the legs. The subject heel should almost touch the tape at the 15 inch mark and 12 inch apart with the legs held straight. The subject bends forward slowly and reaches with parallel hand as far as possible and touches the yardstick. The best of three score was treated as final score.
- e) Percent Body Fat Test:** The purpose of the test was to measure the subject's percent body fat. Skin fold caliper was used to conduct the test. Skin fold measurement of three sites of the body was taken- the triceps muscles. The second one was the medial regions side of the navel part. And the third one was the suprailium. All were taken in the relaxed condition. Each skin fold was measured three times and the medium value was recorded

as the score. The fat percentage was calculated by applying the formula :

$$\begin{aligned} \% \text{ Fat} &= 0.41563 \times (\text{sum of 3 sites}) - 0.00112 \times (\text{sum of 3 sites})^2 \\ &+ 0.36661 \times (\text{age}) + 4.03653 \end{aligned}$$

Menstrual Phases

It the following four phases, test was conducted during middle period, which is given in Table II

Phases	Name of the Phases	Day	Testing Period
A	Menstrual Phase	1 to 4	3rd day
B	Follicular Phase	5 to 13	9th day
C	Ovulation Phase	14	14th day
D	Luteal Phase	15 to 28	21st day

Statistical Procedure

To analyze the data, repeated measure of ANOVA was computed. Scheffe's post hoc test was used to analyze the paired means significant difference.

Discussion

Regarding Cardio respiratory endurance

The result proved that there was significant differences existed between selected menstruation cycle phases on health related physical fitness and Cardio respiratory endurance. The post hoc analysis showed that there was a significant difference noted between phases menstruation and ovulation, and luteal, while other comparisons were not significant.

Regarding Muscular Strength

The results proved that there was significant differences existed between selected menstruation cycle phases on health related physical fitness and muscular endurance. The post hoc analysis showed that there were significant differences noted between menstruation and follicular, menstruation and ovulation and menstruation and luteal, while other comparisons were not significant.

Regarding flexibility and Body composition

The result proved that there was no significant differences existed between selected menstruation cycle phases on health related physical fitness-Flexibility and Body Composition.

Conclusion

1. There was significantly improvement of Cardio respiratory endurance is noticed during ovulation phase o menstruation cycle in comparison to the other phases.
2. On the other hand, significantly improvement of Muscular strength is noticed during lutual phase of menstruation cycle in comparison to the other phases.
3. There were significantly improvement of Muscular Endurance is noticed during follicular, ovulation and lutual phases of menstruation cycle in comparison to the other phase.
4. Lastly no significant improvement of Flexibility and Body Composition is noticed during different phases of menstruation cycle.

References

- Baumgartner.A and Jackson.S.A. (2000) **Measurement for Evaluation in Physical Education and Exercise Science**.Iowa : Wm C. Brown. Publishers.P. 55.
- Das.Laila.(2006) **Text book of Sport Medicine**, New Delhi. Jaypee Brother. P. 5.
- James. Rmorrow.et al (2000). **Measurement and Evaluation in Human Performance**, Champaigna, Human Kintics, P. 50.
- Sing. A. et al (2003). **Essential of Physical education**. New Delhi. Kalayani publication.P. 13.
- Uppal. A. K. (2004). **Physical Fitness and Wellness**.Friends Publication.P. 10.