

## Physiological Parameters of Female Players during Different Days of Menstrual Phase

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### Abstract

**Objective:** To characterize the status of Physiological Parameters i.e. Basal Body Temperature, Peak Flow Expiratory Rate and Heart rate of female players during first, second and third consecutive days of Menstrual Phase and to find out whether there was any significant difference among the three days of Menstrual Phase in female players. **Methodology:** For the purpose of this study, 25 unmarried kho-kho players studying in Guru Nanak Dev Inter College, Lucknow were selected. The age of the subjects ranged between 16 to 20 years with having normal menstrual cycle of  $28 \pm 2$  neither taking medications nor any medical treatment. The days for data collection were: First day of menses; Second day of menses & The third day of menses. **Results:** Insignificant differences found among First Day, Second Day and Third Day in relation to physiological parameters as obtained F-value of Basal body temperature(1.20), Peak expiratory flow rate(0.49) and Heart rate(2.56), which is less than the tabulated value of 3.12, required for F-ratio to be significant at 0.05 level with (2, 72) degree of freedom. **Conclusion:** Insignificant difference was found in relation to basal body temperature, peak flow expiratory rate and heart rate among first, second and third days of the menstrual phase in female players.

**KEYWORDS:** Basal Body Temperature, Peak Flow Expiratory Rate, Heart rate, Menstrual Phases.

### Introduction

Female body is a complex system with hormones playing different roles in the body and makes significant changes in it. Hormones are the chemical substances produced in the body that controls and regulates the activity of certain cells or organs. Many hormones are secreted by special glands, such as thyroid hormone produced by the thyroid gland. Hormones are essential for every activity of life, including the processes of digestion, metabolism, growth, reproduction, and mood control. In female body menstruation is the visible manifestation of cyclic uterine bleeding due to shedding of the endometrial caused by invisible interplay of hormones through hypothalamo-pituitary-ovarian axis? It is the periodic discharge of **blood, tissue, fluid**, and **mucus** from the reproductive organs of sexually mature females. The flow usually lasts from 3-6 days each month as is caused by a sudden reduction in the hormones **estrogen** and **progesterone**. There is a well-defined, predictable pattern of hormonal change that occurs throughout the menstrual cycle. An average menstrual cycle lasts 28 days but may range from 20 to 45 days. The changes in the female sex steroids that modulate the endocrine events during the menstrual cycle can be divided into two phases. The follicular phase starts with menses and ends with ovulation. During the early follicular

phase, both estrogen and progesterone levels are low. Prior to ovulation, there is a marked increase in estrogen levels. Women experience changes in their psychology, physiology, biochemistry etc. during different phases of menstrual cycle, but the most noticeable changes occur during menses. Researchers found so many Sex hormones are involved in central neural control of breathing (D.A. Bayliss & D.E. Millhorn, 1992), and can also affect the lungs and the airways. During menstrual cycle among all the five phases i.e. menstrual, follicular, luteal and premenstrual phase's sensitivity of menstrual phase is most considerable and experienced by the women. Especially the first three days of periods during menstrual phase.

Increased participation of women in sports has led to greater awareness of the menstrual cycle alterations that frequently accompany exercise and training. This raised consciousness has inspired more scientists to investigate the etiologic mechanisms responsible for such changes and has led many athletes to seek medical attention. As well, menstruation has become less of a road back in achieving sports goals for women. A large number of studies have been undertaken to examine the effects of different phases of menstruation cycle, but here the research scholar was going through the minute observation with the query in mind that due to different hormonal changes what is the effect of different days during of menstrual phase (first day, second day and third day) on selected physiological parameters (Basal body temperature, expiratory peak flow rate and heart rate) of female players.

**Research Question: what is the effect of different days during of menstrual phase (first day, second day and third day) on selected physiological parameters (Basal body temperature, expiratory peak flow rate and heart rate) of female players?**

### **Objectives of the study**

For the purpose of the study following objective was formulated:

1. To characterize the status of Physiological Parameters i.e. Basal Body Temperature, Peak Flow Expiratory Rate and Heart rate of female players during first, second and third consecutive days of Menstrual Phase.
2. To find out whether there were any significant difference among First, second and third day of Menstrual Phase in relation to their physiological parameters.

### **Material and Methods**

For the purpose of this study, 25 unmarried kho-kho players studying in Guru Nanak Dev Inter College, Lucknow were selected. The age of the subjects ranged between 16 to 20 years with having normal menstrual cycle of  $28 \pm 2$  neither taking medications nor any medical treatment. All the subjects received an explanation of nature and purpose of the study and gave their formal written consent to participate in the present study. Prior to obtain data, the subjects completed a self made questionnaire regarding their medical history, medications, current health status and menstrual cycle which was made with the help of experts. Utmost care was also taken to obtain clinical based data regarding their health status to maintain research decorum. Research scholar also made a request to all volunteers for not taking any kind of medication during the first three days of menses without prior information to the scholar.

### **Data Collection**

For the purpose of the present study:

- Basal body temperature was measured by Digital thermometer in Celsius, Normal Range of Basal Body Temperature 36.5–37.5 °C;
- Peak expiratory flow rate was measured by the peak flow meter in mm
- Heart rate was taken through carotid nerve for one minute.

The days for data collection were:

- First day of menses;
- Second day of menses &
- The third day of menses.

### Design of the Study

Time series design was used. The time series design has only one group but attempts to show change that occurs when the test/ treatment is administered differs from the times when it is not. Three tests were conducted, i.e. First day of menses; Second day of menses & third day of menses.

### Statistical Analysis

Descriptive Statistics and One Way ANOVA was used at 0.05 level of significance with the help of SPSS 16 version and is presented in the following table.

### Results & Findings

**Table-1**

**Physiological Parameters of female players during first second & third days of Menstrual Phase**

Physiological Parameters	First Day of Menstrual Phase		Second Day of Menstrual Phase		Third Day of Menstrual Phase		F-value
	Mean Value	S.D.	Mean Value	S.D.	Mean Value	S.D.	
<b>Basal body temperature</b>	36.14	0.47	36.30	0.60	36.36	0.54	1.20
<b>Peak expiratory flow rate</b>	1400.00	230.94	1436.00	232.07	1488.00	438.10	0.49
<b>Heart rate</b>	77.32	11.55	79.04	8.49	72.40	11.93	2.56

\* Significant at 0.05 level of significance,  $F_{0.05}(2, 72) = 3.12$

- Mean value of **Basal body temperature** during Third Day>Second Day>First Day of menstrual phase;
- Mean value of **Peak expiratory flow rate** during Third Day>Second Day>First Day of menstrual phase;
- Mean value of **Heart rate** during Second Day>First Day>Third Day of Menstrual phase respectively.

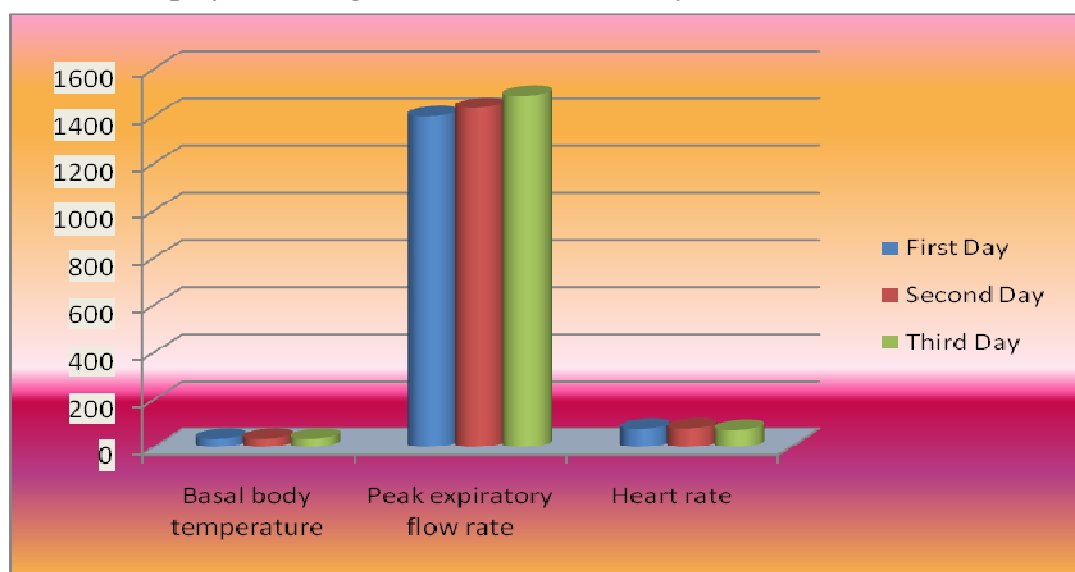
Table- 1 also notifies that there are insignificant differences found among First Day, Second Day and Third Day in relation to physiological parameters as obtained F-value of **Basal body temperature** (1.20), **Peak expiratory flow rate**(0.49) and **Heart**

rate(2.56), which is less than the tabulated value of 3.12, required for F-ratio to be significant at 0.05 level with (2, 72) degree of freedom. Thus it is evident that physiological parameters of First Day = Second Day = Third Day of Menstrual Phase.

Since the Insignificant Difference is found, therefore Least Significant Difference Post Hoc test is not applied for inter- group comparison.

**Figure No. 2**

**Graphical representations for the Mean Value of Physiological Parameters of female players during first second & third days of Menstrual Phase**



### Discussions of Findings

The result of this study has not revealed any significant difference in basal body temperature, peak flow expiratory rate and heart rate among different days of the menstrual phase in female players. Basal body temperature shows a numeric rise during Third day of menstrual phase; Peak flow expiratory rate also shows a numeric rise during Third day of menstrual phase and heart rate shows a numeric rise during second day of menstrual phase when compared to other two days of menstrual phase but was statistically insignificant. The result of the present study may be associated to the fact that the subject of this study were female players who were actively involved to sports at higher level which might have nullified the negative effect that could have been otherwise affected the normal female during menstrual phases. Hormonal secretion are responsible for the functional changes in female body but during menstrual phase the ovarian function gets slow down due to low hormone secretion (**Mona M.Shangold, Gobe Mirkin,1994**) and various changes unable to take place in female players because they are regularly getting proper diet and regular exercise in a systematic and scientific way. This is a positive effect of exercise in female reproductive system.

### Conclusion

**Insignificant difference** was found in relation to basal body temperature, peak flow expiratory rate and heart rate among first, second and third days of the menstrual phase in female players.

### References

1. Aganoff A.Julie and Boyle J.Gregory. (1993).Aerobic Exercise, Mood States And Menstrual Cycle Symptoms.28<sup>th</sup> Annual Conference Of Australian Psychological Society,Goldcoast Old.
2. Bayliss DA, Millhorn DE.(1992).Central neural mechanisms of progesterone action: application to the respiratory system. Journal of Applied Physiology. 1992; 73(2):393-404.
3. Garret Henry E.,( 1981.) "Statistics in Psychology and Education" Bombay: Feffer and Simons Ltd.
4. Jerry R. Thomas, Jack K. Nelson, Stephen J. Silverman. (2005).Research Methods in Physical Activity. Fifth Edition.
1. Kapri B.C., Verma Priti, (January, 2014) "Females Performance during Different Phases of Menstruation Cycle". Asian Resonance, ISSN No. 0976-8602; VOL.-III, ISSUE-I, Pg No.1-3.
5. L.Richard.Dotty.Synder,Huggins.J.Peter,R.George,Lowry,D.Louis.(1981)Endocrine, Cardiovascularand Psychological correlates of Olfactory sensitivity changes during the Human Menstrual cycle. Journal of Comparative and Physiological Psychology.Volume 95(1) Page no.-45-60.
6. McCall, Robert B. (1990) "Fundamental Statistics for the Behavioral Sciences" 5th ed. New York: Harcourt Brace Jovanovich,.
7. Mona M.Shangold, Gobe Mirkin,(1994), "Women and Exercise Physiology and Sports Medicine". F. A. Davis Company 1915 Arch Street Philadelphia, PA 19103.
8. Peter David, "Total Health" London: Marshall Publication, 1988.
9. Shangold MM, Gatz ML, and Thysen B(1981). "Acute effects of exercise on plasma concentration of prolactin and testosterone in recreational women runners". Fertil Steril 35:699.
10. Stoppard, M. (1994). Woman's body: A manual for life. London: Dorling Kindersley.
11. Verma J. Prakash, "Sports Statistics" Gwalior: Venus Publications,2000