Original Resear	Volume - 12   Issue - 10   October - 2022   PRINT ISSN No. 2249 - 555X   DOI : 10.36106/ijar Physical Education A STUDY ON THE SELECTED MENSTRUAL CHARACTERISTICS OF THE COLLEGE GIRLS
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<b>ABSTRACT</b> Direct in	volvement of females in high-intensity exercise causes hormonal changes and also affects the menstrual cycle.

The duration of the normal reproductive cycle in females is about 26-35 days and divided into different phases. In the absence of pregnancy, menstruation or vaginal bleeding occurs, about 8 days after ovulation which is followed by low estrogen and progesterone levels as well as endometrium deterioration. The purpose was to study the menstrual profile of college girls and compare them between the athletes and non-athletes. The subjects were 30 female college athletes with regular conditioning and 30 sedentary female college girls from West Bengal. The variables were Height, Weight, BMI, Menarche Age, Menstrual Age, Menstruation duration, and Flow rate history of the subjects which were measured by the self-made questionnaire validated by Professors and Doctors. The mean day of the menstrual cycle was 27.5 for athletes and 25.9 for non-athletes. The days of menstrual duration also show normal characteristics in the case of athletes and less than the nonathletes. In the case of flow rate also the athletes show less than their counterparts. The menarche ages are lying in the same age range of 12 to 15 years. More non-athletes (23) have crossed over the normal cycle of 25-28 days than the athletes (17). Athletes (27) have a more normal menstrual duration (3-5 days) than non-athletes (21). Non-athletes (8) suffer a long period of menstrual duration than athletes (1). The flow rate of the non-athletes is more than the athletes. A significant effect of exercise occurred on the menstrual profile of college girls. Significance differences were found in the case of menstrual duration and flow rate between athletes and non-athletes. No significant difference occurred in the case of menarche age between athletes and non-athletes.

KEYWORDS : Menstruation, Menarche Age, Menstrual Age, Menstruation duration, Flow rate

## INTRODUCTION

Female involvement in high intensity exercise causes hormonal changes and also affects menstrual cycle.<sup>[1]</sup> Such hormones like estrogen and progesterone plays a vital role during menstrual cycle. Follicle Stimulating Hormone and Luteinizing Hormone are secreted from the anterior pituitary gland to regulate the cyclic development of ova i.e egg development in ovaries. Duration of normal reproductive cycle in female is about 26-35 days and divided into two different phases.<sup>[2][3]</sup> The follicular phase is characterized by high concentration of FSH and it gradually increase estrogen level which mainly secreted by the follicle, whilst the luteal phase is characterized by high concentrations of LH and increase in progesterone secretion by corpus luteum. Estrogen and progesterone secreted by ovaries prepare uterus for pregnancy.1

It is observed that the menarche age is significantly higher in American female athlete. In the study of Klafs C.E and Arnheim it has shown that both high school and college athletes attained menarche significantly later than non-athletes, and the various groups of national and Olympic athletes attained menarche significantly later than high school and college athletes.<sup>[5]</sup> The late menarche for national and international athletes suggests a relationship between delayed menarche and more advanced competitive levels.

In this study to estimate the current status of female college students with menstrual cycle; including the menstrual disorders, the relation of dysmenorrhea, irregular menstruation, exercise and dietary habits related to menstruation and also the genetical causes investigated through the questionnaire by the investigator. It is important to evaluate the current status of menstrual disorders in younger women in order to manage not only the present, but also future quality of life.

Menstruation is the process in the women of the discharging blood and other material from the lining of the uterus at intervals about one lunar month from puberty until the menopause, except during pregnancy.<sup>1</sup> The exact cause of amenorrhea in female athletes is not known. However, whatever the cause, appears to be related to the intensity of training. For example, the incidence of amenorrhea in female middledistance runners was found to be directly related to their weekly training mileage.<sup>[7]</sup> This can be interpreted to mean that the amenorrhea is caused by the training or competition itself or by some other factors related to chronic exercise training such as loss of body weight or general psychological Stress.<sup>18</sup>

normal pattern, and the child bearing functions of the female are normal in every respect. Dysmenorrhea (Painful Menstruation) is probably neither aggravated nor cured by exercise or sports training. In India about 50 % of adolescent girls have no information or understanding of the basic biological process.<sup>[9]</sup>

In this study the current status of young college women in West Bengal in relation to their dysmenorrhea and premenstrual symptoms as well as irregular menstruation was investigated. The title of the present investigation was precisely stated as the "A study on the selected menstrual characteristics of the college girls". The objective was to study selected menstrual characteristics considering the Menarche Age, Menstrual Age, Menstruation duration and Flow rate of college girls and compare them with respect of their participation in physical activity.

It has found that, these disorders (Dysmenorrheal and premenstrual syndrome) are frequently encountered in young women around adolescence.<sup>[10]</sup> The mean age of menarche is 12.5 yrs.<sup>[11]</sup> Dysmenorrheal is the most common (73.83%) gynecological problem associated with female medical students.<sup>[12]</sup> The range of Prevalence of dysmenorrhea is from 51 % to 80 %.<sup>[13][14]</sup> 6.32%, 30.37% and 63.29% participants were suffering from severe, moderate and mild grade of dysmenorrhea.<sup>[15]</sup> Premenstrual syndrome (PMS) is unknown and it is a relatively uncommon disorder during adolescence. Adolescent girls commonly complain of PMS when they are actually experiencing dysmenorrhea or some other psychological problems.<sup>[16]</sup> In case of majority of female adolescence, PMS and dysmenorrhea had significant effect on academic performance and was responsible for school absenteeism.<sup>[17]</sup> BMI Statistically not correlated with dysmenorrhea (P=0.22).<sup>[18][19][20]</sup> Inappropriate dieting often induces amenorrhea in young women and may cause ovarian and dysfunction during subsequent reproductive years.<sup>[21][22]</sup> Significant difference between the stress level of active and non-active females due to menstruation cycle occurred. Daily physical activity can reduce the stress level among the female section, which will ultimately lead to their physical, physiological and psychological wellbeing.<sup>[23]</sup>The mean and standard deviations for the total number of cycles were 29.1 and 7.46, respectively. Cycle lengths between 15 and 45 days averaged 28.1 days with a standard deviation of 3.95 days.<sup>[2]</sup>

## MATERIALS AND METHODS

Subjects: To study the Menstruation Physiology of the Bengali Female Athletes one group of 30 female athletes with regular

Once competition and training are stopped, the menses resumes a INDIAN JOURNAL OF APPLIED RESEARCH

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conditioning and other groups of 30 sedentary female free from any major ailment, of Burdwan district, West Bengal who were in the age of 20 to 30 years, were selected as subject. At the time of data collection, the average height and weight of the subjects were 1.55 mtr. and 48 kg.

## Personal variables: - Age, Height, Weight, BMI

**Physiological variable:** - Menstrual profile considering the Menarche Age, Menstrual Age, Menstruation duration and Flow rate history of the subjects measured by the self-made questionnaire prepared with due consultation with Professors, Doctors and Sports Scientists.

A cross-sectional study was carried out on 60 female students with of two equal group recruited from the educational institutions in the urban areas of a major city in West Bengal. The athlete group of 30 subjects for the present study was selected from the Govt. college of Physical Education for Women Hooghly, West Bengal; having minimum level of participation of inter college, inter sub-division, district level or national level. The non-athlete group of 30 students were selected from the University of Burdwan who were free from any major aliments and not taken part in any play, sports or physical activity. The selected women were explained the purpose of the study and were requested to complete the questionnaires to elicit information relating to Menstrual profile considering the Menarche Age, Menstrual Age, Menstruation duration and Flow rate history. Personal variable such as Age was recorded, Height and Weight were measured and BMI was calculated. The respondents were assured about confidentiality and anonymity as they were told that their names would not be mentioned in the study. The study was conducted during the month May. As it remained more Table 2: Mean And S.D. Of Menstrual Profile Of Athletes And Non-Athletes

or less the same, it could be accepted that environment conditions did not affect the measurement of the subjects on that day. The humidity was found average. Multivariate Pearson chi-square( $x^2$ ) contingency analysis, statistics was computed to find out the relationship. Approved written consent from the subjects has collected.

After obtaining data were tabulated and analyzed by SPSS-23 software. Descriptive statistics such as mean and S.D. were used to analyze personal data, Menarche age, Menstrual cycle length, Menstruation duration and Flow rate that helps to show, describe and summarize data of respondents in a meaningful way. In addition to this, Multivariate Pearson chi-square statistical test was used to examine the menstruation characteristics between two groups i.e., athletes and non-athletes.

## **RESULTS:**

Table 1: Mean And SD Of Personal Data Of The Athletes And Non-Athletes

Variables	Athletes	Non-athletes
	Mean $\pm$ S. D.	Mean ± S. D.
Age (yrs.)	$24.63 \pm 1.88$	22.6 ± 1.33
Height (cm.)	$155.96 \pm 6.40$	$151.43 \pm 6.70$
Weight (kg.)	$52.96 \pm 6.75$	52.1 ± 11.22
BMI (kg./mt <sup>2</sup> )	$21.70 \pm 2.37$	$22.65 \pm 4.33$

Table no. 1 shows that the mean age, height and BMI of the athletes are 24.63 yrs., 155.96 cm. and 21.70 kg./mt<sup>2</sup> respectively and non-athletes are 22.6 yrs., 151.43 cm. and 22.65 kg./mt<sup>2</sup> which are nearly same and the weights 21.70 kg. and 22.65 kg. are almost same.

Variables	Menarche Age (yrs.)			Menstrual cycle (days)			Menstrual duration (days)			Flow rate (use of pad rate in no.)		
	<12	12-15	>15	<25	25-28	>28	<3	3-5	>5	<8	8-10	>11
Mean ± S.D.	10±0	13.6±0.85	16±0	23±0	27.5±0.8	31.6±2.03	2±0	4±0	6±0	5.9±1.2	8.5±0.8	12±1
of Athletes												
Mean ± S.D.	10.5±0.5	13.4±0.9	16±	24±0	25.9±3.6	34.1±3.6	2±0	4.3±0.5	6.1±0.3	6.1±1.0	8.8±0.9	13.4±1.8
Of Non-												
athletes												

## Table 3: Frequency Distribution Of Menstrual Profile Of Athletes And Non-athletes

	Menarche Age		Menstrual cycle			Menstrual duration			Flow rate (use of pad rate in no.)			
	<12	12-15	>15	<25	25-28	>28	<3	3-5	>5	<8	8-10	>11
Athlete	1	28	1	1	12	17	2	27	1	11	17	2
Non-	2	27	1	1	6	23	1	21	8	7	13	10
athlete												

Table 2 shows that the mean menarche age considering three age category are same for both the athletes and non-athletes. In case of days of menstrual cycle the mean value (27.5) of athlete shows normal cycle in comparison to the non-athletes (25.9). The days of menstrual duration also shows normal characteristics and less than the non-athletes. In case of flow rate also the athletes (5.9, 8.5, 12) shows less than their counterparts (6.1, 8.8, 13.4).

Table 3 shows that almost all the athletes and non-athletes menarche ages are lying in the same age range of 12 to 15 years. More number of athletes has the normal days of menstrual cycle of 25-28, but more non-athletes (23) has cross over the normal cycle than the athletes (17). The menstrual duration (3-5 days) also normal in case athletes (27) than the non-athletes (21) and the non-athletes (8) suffers longer period of menstrual duration than the athletes (1). In case of flow rate the non-athletes are more than the athletes.

# Table 4: Chi-square Results Of Association Of Menarche Age, Menstrual Cycle, Menstrual Duration, Flow Rate Between Athlete And Non-Athlete

Table Analyzed	Menarche	Menstru	Menstrua	Flow
	Age	al cycle	l duration	rate
Chi-square, df	0.3515, 2	34.74, 2	6.528, 2	6.756, 2
P value	0.8388	0.0436	0.0382	0.0341
Statistically significant (p<0.05)?	NO	Yes	Yes	Yes
Number of rows	2	2	2	2
Number of columns	3	3	3	3

## Significant level at 0.05 level, df-2: Table value 5.991

Since the p-value is less than .05 in case of menstrual cycle, menstrual duration and flow rate and hence statistically significant, there is sufficient evidence to say that there is an association between the

athletes and non-athletes regarding these variables. The not significant value in case of menarche age clearly indicate that there is no association between athletes and non-athletes regarding menarche age.

### **DISCUSSION:**

Above study reflected that there are no such differences of commencement of menarche age between athlete and non-athlete from the biological and physiological point of view which takes place between 13-15 years of age. Though we mentioned that in case of non-athlete menarche age has started earlier. On the other hand different study reflected that the menarche age of the athletes started on later age and they have continued longer duration of age, it may result to maintain their level of physical fitness and wellness. The non-athletes are suffering from different physical and physiological problems after 40-45 years of age due to their menopausal effect.<sup>[25]</sup> Present study have reflected that non-athletes' flow rate and the duration of menstrual cycle is higher than the athletes. It may cause that athletes are involved in regular physical activities and accordingly they have acquired cumulative advantage of physiological effects and therefore they are in advantage in concern to menstrual cycle then non-athletes.

Menstrual disorders are a common presentation by late adolescence. 75% of Girls experiences some problem associated with menstruation.<sup>[18]</sup> During the first two years after menarche, most cycles are anovulatory. Despite this they are somewhat regular within a range of approximately 21 to 42 days, in contrast to an adult woman, whose cycle typically range between 21 and 35 days. The mean duration of menses is 4.7 days; 89% of cycle last 7 days, the average blood loss par cycle is 35 ml.<sup>[26]</sup> The age of set of menarche varies from region to region, population to population, individual to individual and changes with time.<sup>[27]</sup> It is some extent influenced by hereditary factor, body build, and season and also may be the causes of socio economic status,

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nutrition habituation etc. This monthly event in the reproductive age of women is associated with endocrine, neural, genetic environmental mechanism and so on  $^{\scriptscriptstyle [28]}$ 

From the above study we revealed higher significant values on some factors related to menstrual cycle such as menstrual duration and flow rate. Athlete shows better results in this study than their counterpart. From different studies we came to know that out of the 31% who sometimes competed during menstruation, all completed the events, especially those involve in team competition. Form the medical standpoint, there is some disagreement regarding sports participation during menses. Some physicians believe that participation should not be allowed in those sports in which there is a greater incidence of menstrual disorders.<sup>[29]</sup>

## **CONCLUSIONS:**

Within the limitation of the study it is concluded that there is significance difference existed in case of menstrual duration, menstrual cycle and flow rate between athletes and non-athletes and the athletes enjoys more physiological regularities than their counterpart. No significant difference occurred in case of menarche age between athletes and non-athletes. Athlete who exercises regularly enjoys some physiological benefit over the nonathletes who are sedentary. Further randomized prospective studies would be necessary to study the menstrual characteristics of different other section of women in this society.

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#### **Authors' Contributions:**

Asish Paul: Study concept and design.

Gopa Saha Roy and Asish Paul: administrative, technical, and material support, Drafting of the manuscript and interpretation of data.

Shipra Dey, Gopa Saha Roy and Asish Paul: Acquisition of data, Critical revision of the article for important intellectual content, Statistical analysis. All authors read and approved the final manuscript.

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