

A study of selective physiological parameters in physical training college students

Subhra Basak^{1*} and Keya Biswas²

¹Assistant Professor in Physiology (WBES), State Institute of Physical Education for Women, Hastings House, Kolkata, India; ²M.P.Ed. Student, State Institute of Physical Education for Women, Hastings House, Kolkata, India.

***Corresponding Author: basaksubhra@yahoo.in**

Abstract

Physiology is the study of how living systems function. Physiology is the basis for all of the biomedical sciences. Physiological parameters vary in different subjects involved in different types of activity and life style. Purpose: The aim of the study is to measure the difference in physiological parameters of general and physical training college students. A total 30 physical training college students were selected in this study. The following criterions were selected to measure the different physiological parameters of the subjects. Physiological parameters found in the study are in normal range. VO_{2max} is 53.03ml/kg/min which more than college students and similar to the athlete. Dysmenorrhea is present in 76.67% and PMS in 66.67% of subjects. Regularity, length of menstrual cycle and amount of blood flow were statistically not correlates with dysmenorrhea in present study. Abdominal bloating (66.67%), Loss of appetite and anorexia (63.33%), Feeling heaviness in the lower abdomen (63.33%), Tiredness (56.67%) and Pain (53.33%) are the most common pre menstrual symptoms.

Keywords: Blood pressure, BMI, menstrual cycle, PMS, heart rate.

Introduction

Physiology is the study of how living systems function. Physiology is the basis for all of the biomedical sciences. Physiological health measures some physiological parameters, they are Blood pressure, Heart rate, VO_{2Max} , Menstrual cycle, Maximum breathing capacity, Respiratory rate, Percentage of fat, Lean body mass etc. Physiological parameters reflecting health state generally, human state is defined by variety of physiological parameters, which usually are self interdependent. The human

body is similar to a machine. If mistreated and not properly maintained, the machine will malfunction. Our bodies are similar in that improper maintenance fosters deterioration of numerous physiological systems within the body. Physiological parameters vary in different subjects involved in different types of activity and life style. So, it can be assumed that the physiological parameters of the students involved in regular physical activity in the physical training college.

Methodology

Subject

A total of 30 physical training college students were selected in this study. Procedure: The following criteria were selected to measure the different physiological parameters of the subjects.

Physiological variables:

- Respiratory rate
- Blood pressure
- Heart rate
- Vo₂ max
- Maximum breathing capacity
- BMI
- Status of Menstrual Cycle

Tool and Test used

- Heart rate was measured from radial pulse.
- Blood pressure was measured by sphygmomanometer.
- M.C was recorded by standard questionnaire.
- Vo₂ Max was measured by Queens College test.
- Maximum breathing capacity was measured by peak flow meter.
- Respiratory rate was measured manually.
- BMI was measured by Body Height and weight.

Statistical procedure

Mean and standard deviation and X² (chi square) test were used for statistical calculation.

Results and discussions

Physiological parameters found in the study are in normal range (Table 1). The maximal oxygen uptake (VO_{2max}) is the best overall measure of aerobic power (Popadic et al., 2009; Reilly, 2005). VO_{2max} of the subjects is 53.03ml/kg/min. The women's soccer team ranged in age from 18-21 had an average VO_{2max} of 51.0 ml/kg*min with a range of 43.6 to 57.8 ml/kg*min (Christine et al., 2010).

Looking specifically at the age range most closely resembling the age range specified in our data, the normative values of VO_{2max} for women (age 20-29) is 37.8 mL/kg*min. In the present study the mean age of menarche was 12.07 ± 0.89 years, which is very similar to many other studies (Cakir et al., 2007; Demir et al., 2000). Most of the girls related to one or more menstrual problems (Table 2).

Dysmenorrhea is the most common (76.67%) gynecological problem in physical training college students in this study. Several other studies reported its prevalence as 67.7% (Lee et al., 2006), 67.2% (Sharma et al., 2008), 67% (Sharma and Gupta, 2003), 67% (McKay and Diem, 1995), 67%, 74% (Jayashree and Jayalakshmi, 1997) and 59.7% (Jerry et al., 2009). The ranges of prevalence of dysmenorrhea from 51% to 80% have been reported by many other studies. In this study, 6.67%, 6.67% and 66.67% participants were suffering from severe, moderate and mild grades of dysmenorrhea, while study by Jerry et al., (2009) showed that 14% severe, 38% moderate and 49% subjects were mild sufferers. Other common disorders in present study were abnormal menstrual flow, abnormal duration of flow followed by irregular length of cycle and polycystic ovarian disease, while in the Malaysian study (Lee et al., 2006) a 'long cycle' was a common menstrual disorder among adolescent girls; this may be due to difference in their gynecological age.

In biologic variables, BMI statistically not correlated with dysmenorrhea (Table 4). The evidence of an association between overweight and dysmenorrhea is inconsistent (Andersch and Milsom, 1982; Harlow and Park, 1996; French, 2005). Another study by Parazzini et al., (1994) has not found an association with obesity.

Table 1. Physiological Parameters of the Physical Training College Students.

SL. NO.	Parameter	Mean	SD
1	Height(cm)	156.97	0.06
2	Weight(kg)	51.6	7.99
3	Respiratory rate(rate/min)	21.4	4.32
4	Systolic Blood pressure(mmHg)	110.37	8.27
5	DiastolicBlood pressure(mmHg)	72.23	6.95
6	Heart rate(beats/min)	60.3	7.01
7	Maximumbreathing capacity(ml)	404	69.77
8	VO ₂ max(ml/kg/min)	53.03	8.69

Table 2. Menstrual cycle characteristics in Physical training college students

Menstrual cycle characteristics	No. of subjects	% (Percentage)
Length of cycle (days)		
<20 Days	2	6.67
21-35 Days	27	90
>35 Days	1	3.33
Amount of blood flow/cycle		
Little (1-4 pads per day)	30	100
Moderate (5-10 pads per day)	0	0
Heavy (2 pads at a times on first day)	0	0
Duration of bleeding (days)		
<2 Days	0	0
2-7 Days	30	100
>7 Days	0	0
Dysmenorrhea		
Yes	23	76.67
No	7	23.33
Grade of dysmenorrheal		
Grade0	6	20
Grade1	20	66.67
Grade2	2	6.67
Grade3	2	6.67
Premenstrual symptoms (PMS)		
Yes	20	66.67
No	10	33.33

Table 3. Body mass index wise distribution of participants.

Body Mass Index(BMI)	No of subjects	% (Percentage)
Under weight (<18.50)	8	26.67
Average weight (18.50-24.99)	20	66.67
Over weight(>25.00)	2	6.67

Table 4. Factors associated with Dysmenorrhoea.

BMI	Dysmenorrhea		Total
	Possitive	Negative	
Under weight (<18.50)	8(34.78%)	0(0%)	8
Average weight (18.50-24.99)	14(60.87%)	6(85.71%)	20
Over weight (>25.00)	1(4.35%)	1(14.29%)	2
	23	7	30
$\chi^2 = 3.726$, Not significant			
Length of cycle			
>20 Days	2	0	2
20-30 Days	20	7	27
>35 Days	1	0	1
	23	7	30
$\chi^2 = 1.01$, Not significant			

Table 5. Percentage of participants with dysmenorrhoea who suffer from PMS.

PMS	Number	Percentage
1. Lumbago/Backache	18	60
2. Abdominal bloating	20	66.67
3. Loss of appetite and anorexia	19	63.33
4. Increased appetite	0	0
5. Nausea or vomiting	5	16.67
6. Mood swings	8	26.67
7. Depression	4	13.33
8. Gaseous distension of abdomen	7	23.33
9. Irritability	5	16.67
10. Inability to concentrate on work	14	46.67
11. Nervousness	3	10
12. Constipation	7	23.33
13. Diarrhea	1	3.33
14. Profuse sweating	2	6.67
15. Lethargy or sleeplessness	14	46.67
16. Tiredness	17	56.67
17. Sleeplessness	2	6.67
18. Increased sleep	12	40
19. Tenderness of breasts	10	33.33
20. Feeling heaviness in the lower abdomen	19	63.33
21. Pain	16	53.33
22. Swelling in the ankle & knee joints, swelling of face	0	0
23. Headache	5	16.67
24. Skin disorder	11	36.67

Regularity, length of menstrual cycle and amount of blood flow were statistically not correlates with dysmenorrhea in present

study. Some studies have shown a link between dysmenorrhoea and several risk factors including early menarche, irregular or

long cycles and heavy menses (Andersch and Milsom, 1982). This controversial results, less no in severe and moderate dysmenorrhea may be due to regular exercise of the students.

In present study 66.67% students had PMS (Table 5), in other studies PMS was reported as 63.1% (Sharma et al., 2008). Etiology of 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 psychosocial problems (McEvoy et al., 2004). Abdominal bloating (66.67%), Loss of appetite and anorexia (63.33%), Feeling heaviness in the lower abdomen (63.33%), Tiredness (56.67%) and Pain (53.33%) are the most common symptoms reported by participants. Prevalence of premenstrual symptoms in the present study was higher than a Japanese survey (Hinohara and Fukui, 2008) that reported back pain in 6.9% of women and headache in 11% of women (compared with our results of 72% and 22% respectively).

Conclusion

Dysmenorrhea is common among the Bengali college students and it is major problem representing the leading cause of college/class absenteeism, information about its effective medication may help alleviate the discomfort during menses. In the present study dysmenorrhea and premenstrual symptoms are also their major physiological problems it may be due to small sample size. But most of them have mild dysmenorrhea which does not require any medicines. Relationship between dysmenorrhea and obesity (BMI), duration of bleeding, length of cycle and amount of blood flow have not been found. Endurance capacity is more than the non-athlete but similar to the sports

women it is due to their regular physical activity. Now a days, physical inactivity is seen among students due to sedentary lifestyle which may lead to many mental and health problems. Hence, we suggest that students should get involved in sports and it should be made a compulsory subject in colleges.

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