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## Effects of Regular Exercise on Premenstrual Symptoms in Reproductive Age Group.

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### Research Article

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#### ABSTRACT

Regular exercise activity has been repeatedly been shown to have many health benefits in woman. The present study was aimed to determine the influence of regular exercise on premenstrual symptoms in premenopausal woman. This cross sectional study included a total of 100 healthy premenopausal women was divided into two groups which included the exercising group and the non exercising group. The exercising group included 50 women who were selected from the health and fitness centres in Mangalore. The control group included 50 healthy non exercising women selected from the general population. In the present study, the psychological, behavioral and physical symptoms were significantly lower ( $P < 0.001$ ) in the exercising group than the non exercising group. Further, it was observed that skin changes were significantly less ( $P < 0.01$ ) in the exercisers than the non exercisers.. In conclusion, regular aerobic exercise as a part of life style modification decreases the premenstrual symptoms.

#### INTRODUCTION

Premenstrual syndrome (PMS) is a condition occurring in the luteal phase of the menstrual cycle prior to the onset of a woman's menstrual period. It is estimated that up to 85% of women who menstruate experience at least one premenstrual symptom, occurring within the two weeks before menses and easing after menstruation begins [1]. Over 300 PMS symptoms have been described [2,3]. In the recent years empirical research has been devoted specifically to the investigation of premenstrual distress as a clinical syndrome [4, 5, 6]. The underlying mechanism of PMS, which is multifactorial and might affect diverse neuropsychophysiological systems, remains unclear and speculative. It has been attributed to hormonal changes, neurotransmitters, prostaglandins, diet, drugs and lifestyle. In order to ameliorate or eliminate the symptoms a variety of treatment method including medical, surgical, alternative medical treatment are recommended [7, 8]. Considering their side effects, medical and surgical therapies are used only in severe PMS and in case of no response to other therapeutic management, focusing on the safe exercise especially in woman with mild symptoms are suggested [9, 10, 11]. Although exercise has a multitude of health benefits, its association with reducing PMS occurrence and symptom severity is not well documented. Previous observational studies examining this relationship showed inconsistent findings, with some studies suggesting a protective effect. Metheny and Smith [12] measured positive and negative affect and found that women who exercised regularly reported more positive affect than non-exercisers. Gannon et al. [13] found that the length of time women had been exercising correlated significantly with lower levels

of menstrual symptoms. The purpose of this study is correlating the effects of aerobic exercise on premenstrual symptoms in the woman of reproductive age group. With this information this study might provide direction of further research which, in turn will serve to generate directional and predictive hypothesis useful in establishing guidelines for a physiological treatment regime for premenstrual syndrome.

## MATERIALS AND METHODS

This cross sectional study included a total of 100 female subjects (30-45 years) in two groups, the exercising group and non exercising group. The exercising group included 50 women who were selected from the health and fitness centers in Mangalore. The aerobic exercise program consisted of a 5 min warm up, followed by a 45 min limb and trunk fast exercise session and a 10 min cool down. Movements such as lunges, squats, staircase step, jumping jacks, and push-ups are conducted so as to raise the heart rate. The total exercise time duration was for one hour, three times a week for six months. The control group included 50 healthy non exercising women. They were selected from the general population. After detailed enquiry of the medical history of the subjects, those with history of smoking, alcoholism, medical illness were excluded. Subjects on oral contraceptive pill, hormonal replacement therapy, drugs that alter the cardiovascular functions were also excluded from the study. Informed written consent was obtained from all participants, and the experiment protocol was approved by Ethics committee of the college. A careful history was taken of all the subjects and a general physical examination was done. A premenstrual syndrome questionnaire was given to the participants and they were asked to indicate their overall severity of symptoms was "none" (no effect); "mild" (present but does not interfere with activities); "moderate" (present and interferes with activities but not disabling); or "severe" (Unable to function). Information was also collected through a self-reported questionnaire. All the study parameters were recorded in the morning to avoid circadian variations.

PMS symptoms were evaluated in following sets

- **Psychological symptoms:** Anxiety, irritability, Mood swings, Nervous tension
- **Behavioural symptoms:** Depression, Crying, Forgetfulness, Confusion, Insomnia
- **Physical symptoms:** headache, fatigue, fainting, backache, weakness, Pain radiating down the thighs
- **Autonomic symptoms:** Nausea, diarrhoea, palpitations, sweating, constipation
- **Neurovegetative symptoms:** Sleep disorders, appetite changes, libido
- **Electrolyte changes:** Fluid retention, weight gain, Swollen extremities, Breast tenderness, Abdominal bloating
- **Skin changes:** Oily skin, Acne

### Statistical Analysis of data

The collected data will be entered into MS Excel & analysis will be done by using SPSS ( Statistical Package for Social Sciences) version 11.5. Statistical test "student t test" will be done and P- value < 0.05 will be taken as statistically significant.

## RESULTS

**Table 1: Prevalence of Premenstrual symptoms in exercisers and non exercisers group; Values are expressed in Mean  $\pm$ SD.**

PMS SYMPTOMS	N	EXERCISERS GROUP	NON EXERCISERS GROUP
PSYCHOLOGICAL	50	2.32 $\pm$ 2.52	3.82 $\pm$ 2.56 <sup>+++</sup>
BEHAVIORAL	50	1.08 $\pm$ 1.49	1.82 $\pm$ 2.03 <sup>◆◆</sup>
PHYSICAL	50	1.82 $\pm$ 1.92	2.94 $\pm$ 2.17 <sup>◆◆◆</sup>
AUTONOMIC	50	0.88 $\pm$ 1.22	0.62 $\pm$ 0.92 <sup>NS</sup>
ELECTROLYTE	50	2.02 $\pm$ 1.82	2.78 $\pm$ 2.17 <sup>NS</sup>
NEUROVEGITATIVE	50	0.84 $\pm$ 1.07	0.56 $\pm$ 0.76 <sup>NS</sup>
SKIN	50	1.06 $\pm$ 1.09	1.70 $\pm$ 1.40 <sup>□</sup>

N = Total number of subjects in the study

<sup>+++</sup>P< 0.01; Comparison of psychological symptoms in exercisers group and non exercisers group

<sup>◆◆</sup>P<0.01; Comparison of behavioral symptoms in exercisers group and non exercisers group

<sup>◆◆◆</sup>P< 0.01; Comparison of physical symptoms in exercisers group and non exercisers group

<sup>□</sup>P<0.01; Comparison of skin changes in exercisers group and non exercisers group

Table 1 shows the prevalence of premenstrual symptoms in exercisers and non exercisers groups. It was observed that psychological, behavioral and physical symptoms were significantly lower ( $P < 0.001$ ) in the exercising group than the non exercising group. Further, it was observed that skin changes were significantly less ( $P < 0.01$ ) in the exercisers than the non exercisers. No statistically significant variations were observed in autonomic, electrolyte and neurovegetative changes in both the exercisers and non-exercisers.

## DISCUSSION

In the recent years premenstrual Syndrome is a major clinical entity affecting large segment of female population. The purpose of this study was to correlate the combined effects of aerobic exercise on premenstrual syndrome in reproductive age group. In the present study, the effect of six months aerobic exercise on psychological, behavioral and physical symptoms was evaluated and the results showed the positive effects of regular aerobic exercise on PMS. Previous study [14, 15] results suggest that women who undertake regular, moderate, aerobic exercise show significantly lower levels of negative mood states, (anger, contempt, disgust, sadness, hostility, fear, shame, shyness, and guilt), than nonexercisers. Gannon et al [16] also reported a reduction in pain, impaired concentration, and behavior change with increasing age. The present results are in accordance with the previous findings [17, 18, 19]. Exercise may act as a distraction from intrusive thoughts, and allow positive thoughts to surface, decreasing depression in the short-term. Another possible explanation is that exercise improves body image and self-efficacy which impact on self-concept and self-esteem. The increased social contact offered by exercise groups may be particularly relevant. In the present study the oily skin and acne was comparatively less in the exercisers than the non exercisers showing the positive effect of regular exercise. By increasing blood flow, exercise helps nourish skin cells and keep them vital. Blood carries oxygen and nutrients to working cells throughout the body, including the skin. In addition to providing oxygen, blood flow also helps carry away waste products, including free radicals, from working cells. A bout of exercise helps flush cellular debris out of the system. Aerobic exercise might also improve PMS symptoms by impacting circulating hormone levels acting on the HPA axis.

The present study shows that regular aerobic exercise as a part of life style modification will relieve premenstrual symptoms. The findings of this study warrant the attention of health care providers as they plan patient involvement regime, particularly in the area of premenstrual syndrome.

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