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**V Yashika**  
PhD Research Scholar  
Department of Physical  
Education and Sports,  
Pondicherry University,  
Pondicherry, India

**Dr. G Vasanthi**  
Professor Department of  
Physical Education and Sports,  
Pondicherry University,  
Pondicherry, India

## Effect of yoga and pilates on selected psychological variables on irregular menstrual cycle among college women

**V Yashika and Dr. G Vasanthi**

### Abstract

The initiative of this study was to analyze the effects of yoga and pilates on selected psychological variables on irregular menstrual cycle among college women. To achieve this purpose total of forty five women subjects (N=45) from Pondicherry University were opted as subjects within the age group of 22 to 25 years. The participants were furthermore classified into three equal groups of 15 subjects each in a random manner, in which, experimental batch – I undertook yogic practices, group – II physical exercises and finally control group. Training was given for six days per week for twelve weeks. Pretest and post test was conducted on selected psychological variables such as depression and pain before and after the training. The objective of this analysis was to observe the effects of yoga and pilates on selected psychological variables on irregular menstrual cycle among college women. The data collected from pre and post test was statistically evaluated using ANACOVA and the result concluded that both yoga and pilates training has significant difference on selected psychological variables namely depression and pain than the control group. When compared between the two experimental groups yoga group was found to be significant than the pilates group on depression and pain.

**Keywords:** Yoga, pilates, psychological variables, depression, pain

### Introduction

According to Patanjali's Yoga Sutra: "Sthiram, Sukham, Asanam", which denotes 'Asana is a body posture and a state of being during which one will stay steady, calm and comfortable'. Yoga focuses on range of movement and maximus or magnus (broad muscle group). It provides balance, endurance, strength, spirituality, and some gross motor motion. Yoga is a discipline aimed at integrating a person's physical, mental and spiritual fitness. On the other hand Pilates has focal point on developing strength, muscle toning, body control, and range of movements, which focuses on core strength. Perhaps it's doable that Pilates might in some way in which inspire yoga, yoga admittedly inspired Pilates. It is decisive that both Pilates and yoga offer control of stress, range of movements (flexibility), strength, control, and endurance. But the substantial difference of these two is emphasis on the spiritual component.

### Yoga and Pilates on menstrual problem

Yoga is apart from religion; it's the way of living that focus in a direction, "a healthy mind in a healthy body". Mortals comprises physical, psychological and spiritual being, where yoga aids nurture equitable blooming of all the three. Focused mind and controlled stress is found in a healthy and fit body. Staying active is one of the best way to keep the bodies healthy and to improve one's overall well-being and quality of life. Many women are in pain during their menstrual period. This is because the uterus contracts and stops blood and oxygen supply, causing pain to belly, waist and breasts. Yoga and pilates are fantastic forms of exercise for women who have any issues with their menstrual cycle. One of the fundamentals of these two forms of exercise is the heavy emphasis on diaphragmatic breathing. Deep breathing promotes relaxation, increases concentration, enhances mood and allows for deep stretching of the rib cage, belly and pelvis.

In women with period problems such as period pain, heavy periods, and spotting, the pelvic floor muscles can become tight and constricted.

### Correspondence

**V Yashika**  
PhD Research Scholar  
Department of Physical  
Education and Sports,  
Pondicherry University,  
Pondicherry, India

By working the pelvic floor muscles, you can improve blood flow and remove any build-up of old blood, as well as promote relaxation of these tight pelvic floor muscles.

**Methodology**

To obtain the purpose of the present analysis a total of 45 women subjects (N= 45) from Pondicherry University were opted. The age group of the subject’s ranged within 22- 25 years. The subjects were further classified randomly into three

groups as experimental batch – I, experimental batch – II and control batch – III with 15 subjects each. Only the two training batches i.e. Batch- I and Batch- II underwent yoga practice and pilates training for six days in a week for twelve weeks. Pretest and post test was conducted for the three groups on the selected psychological variables using Beck's Depression Inventory for assessing depression and Visual Analogue Scale (VAS) for assessing pain before and after the training programme.

**Table 1:** Analysis on depression for control group, yogic group and pilates group

Test		Yogic group	Pilates group	Control group	Sum of variance	Sum of squares	Df	Mean squares	F ratio
Pre test	Mean	40.6	40.73	41.07	B	1.73	2	0.867	0.32
	SD	1.84	1.49	1.57	W	113.47	42	2.70	
Post test	Mean	33	34.73	38.07	B	198.93	2	99.47	53.65*
	SD	1.31	0.96	1.70	W	77.87	42	1.85	
Adjusted Mean		33.04	34.75	38.02	B	189.30	2	94.65	52.42*
					W	74.029	41	1.81	

\*Significant at 0.05 level

The result determined from the analysis of co-variance reveals that mean and standard deviation scores of initial test on depression on control, yogic and pilates are 41.07±1.57, 40.6±1.84 and 40.73±1.49 respectively, resulting with “F” ratio score of 0.32, signifying that there is no significant difference on pre-test ‘F’ ratio among three groups on depression, where the calculated value ‘F’ 0.32 is less than the demanded table value i.e.3.23.

The mean and SD of above post-test table denotes that, ‘F’

ratio value 53.65 has provided significant difference on all three batches which are 38.07±1.70, 33±1.31, 34.73±0.96 on depression, where the calculated value ‘F’ 53.65 is more than the table value 3.23.

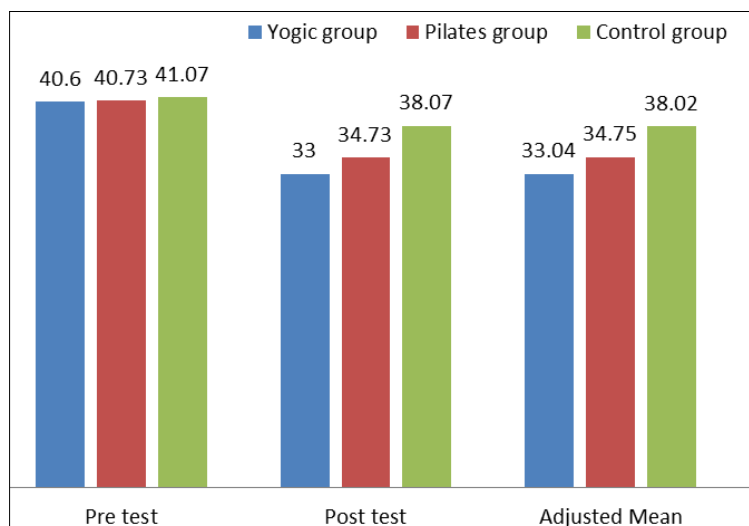
Finally the adjusted mean score manifests that calculated ‘F’ ratio value 52.42 scored to be greater than the required table value 3.23 which are 38.02, 33.04, 34.75 which is more than the critical ‘F’ value at 2 and 41 degree of freedom found to be different among all the three groups on depression.

**Table 2:** Scheffe's post hoc test for depression

Control Group	Yogic Group	Pilates Group	Mean Differences	C.I. Value
38.02	33.04	-	4.98*	1.22
38.02	-	34.75	3.27*	
-	33.04	34.75	1.71*	

Confidence Interval value at 0.05 level is 1.22

The Scheffe's post hoc test denotes that there is significant difference between the paired mean of the three groups, since the obtained value is higher than the required table value.



**Fig 1:** Bar graph depicting mean points of initial and final test (pre, post) and adjusted post-test results of yogic, pilates and control groups of depression.

**Table 3:** Analysis on pain for control group, yogic group and pilates group

Test		Yogic group	Pilates group	Control group	Sum of variance	Sum of squares	Df	Mean squares	F ratio
Pre test	Mean	8.47	8.60	8.73	B	0.53	2	0.267	0.40
	SD	0.91	0.73	0.79	W	28.27	42	0.67	
Post test	Mean	4.73	5.67	6.67	B	28.04	2	14.02	17.53*
	SD	0.88	0.81	0.97	W	33.60	42	0.80	
Adjusted Mean		4.71	5.67	6.69	B	29.01	2	14.51	18.28*
					W	32.543	41	0.79	

\*Significant at 0.05 level

Required value for degrees of freedom 2&42 at 0.05 = 3.22

Required value for degrees of freedom 2&41 at 0.05 = 3.23

The result determined from the analysis of co-variance reveals that mean and standard deviation scores of initial test on pain among control, yogic and pilates are  $8.73 \pm 0.79$ ,  $8.47 \pm 0.91$  and  $8.60 \pm 0.73$  respectively, resulting with "F" ratio score of 0.40, signifying that there is no significant difference on pre-test 'F' ratio among three groups on pain, where the calculated value 'F' 0.40 is less than the demanded table value i.e.3.23.

The mean and SD of above post-test table denotes that, 'F'

ratio value 17.53 has provided significant difference on all three batches which are  $6.67 \pm 0.97$ ,  $4.73 \pm 0.88$ ,  $5.67 \pm 0.81$  on pain, where the calculated value 'F' 17.53 is more than the table value 3.23.

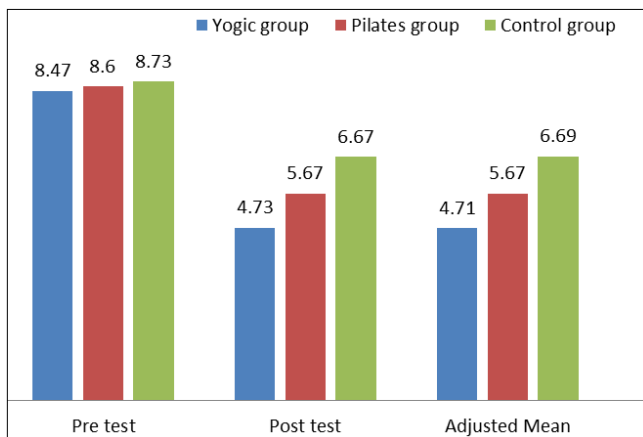
Finally the adjusted mean score manifests that calculated 'F' ratio value 18.28 scored to be greater than the required table value 3.23 which are 6.69, 4.71, 5.67 which is more than the critical 'F' value at 2 and 41 degree of freedom therefore found to be different among all the three groups on pain.

**Table 4:** Scheffe's post hoc test for pain

Control Group	Yogic Group	Pilates Group	Mean Differences	C.I. Value
6.69	4.71	-	1.98*	0.81
6.69	-	5.67	1.03*	
-	4.71	5.67	0.96*	

Confidence Interval value at 0.05 level is 0.81

The Scheffe's post hoc test denotes that there is significant difference between paired mean of the three groups, since the obtained value is higher than the required table value.



**Fig 2:** Bar graph depicting mean points of initial and final test (pre, post) and adjusted post-test results of yogic, pilates and control groups of pain

### Conclusion

The analysis of data revealed that, the experimental group which underwent the yogic practice and pilates training showed significant improvement in selected psychological variables namely depression and pain than the control group. Finally it is concluded that when collated between the values of two experimental batches, it is found that yogic group has showed significant improvement in both psychological variables.

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