

## EFFECTS OF SURYA NAMASKAR AND YOGA NIDRA ON PHYSICAL PROBLEMS OF ADOLESCENT GIRLS DURING THEIR MENSTRUATION

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### Abstract

*Adolescence is a developmental transition between childhood and adulthood. In this phase of there are several physical and physiological changes taken place in the body. Menstrual cycle is the one of the major change occurred in the female's body. Though it is a normal physiological process, many a times associated with physical discomforts before and during menstruation. Surya Namaskar and Yoga Nidra offer great help at puberty. The purpose of the present study is to find out the effects of Surya Namaskar and Yoga Nidra on physical problems of adolescent girls during their menstruation. To achieve this purpose researcher selected 180 adolescent girl (mean age=13.23 ± 0.756) who have started their menses students. They were assigned into three equal groups (n=60 in each group) viz., SNG, YNG and CG and 24 weeks well designed Surya Namaskar and Yoga Nidra programme is implemented on the respective group. A 9 item questionnaire for measuring physical problems constructed by researcher is used for the data collection. It is concluded that, both Surya Namaskar and Yoga Nidra help to reduce physical problems ( $p < 0.01$ ) of adolescent girls during menstruation in 24 weeks.*

**Key words:** *Surya Namaskar, Yoga Nidra, Menstrual problems, Adolescent girls.*

### Introduction:

Adolescence is a period of transition, stress and storm. The term adolescence has been defined by World Health Organization as 'a period of life where a series of varied, rapid and extensive change occurs'. After infancy period, it is a crucial phase to catch-up growth in the life cycle of girls. At this stage many physical & physiological changes take place.

Menstruation is purely a physiological process preparing the female body for reproduction (Iyengar, G. S., 2008). It is a natural monthly cycle in women. Menstruation is a periodic change occurring in a female in which discharge of blood and cells which sheds from the lining of the uterus

takes place from the cavity of the womb. Girls begin to menstruate during the period about 10 to 14 years. The average age is approximately 12 years. Menstruation though a normal physiological process many a times is associated with disturbances before and during menstruation (Deo and Ghattargi, 2007). The physiological and psychological changes are causes of discomforts and affecting the daily routine, physical and academic performance.

The *Surya Namaskar* is one of the best exercises that people can perform. The benefits occurring from these exercises are unique and excellent. *Surya Namaskar* means prayer of Lord 'Surya' i.e. Sun. The biggest and ultimate source of energy on this planet is only Sun. Some asanas of yoga are binded in a chain forming *Surya Namaskar* keeping the importance of breath control in *yogasana*, equal importance is given on breath control or breathing in i.e, pranayam and recitation of different mantras (Unkule, 2014; Mandalik, 2015). Somewhat the practice of *pranayam* is also included in it. Though *Surya Namaskar* is a link of few asanas from *yogasana*, still in the ancient books of yoga the importance of *Surya Namaskar* is mentioned separately, hence it is surprising.

The series of exercise in *Surya Namaskar* activates the endocrine glands and the chakras. It accords overall strength and flexibility to the body.

*Yoga Nidra* (Sanskrit for Yogic Sleep) is a powerful technique from the Tantra *Yoga* tradition. *Yoga Nidra*, although Tantric in origin can be classified as a part of the *Raja Yoga* system's eight limbs of *yoga*, the well-known codification system of the Yogic practices by Patanjali (an Indian sage who lived around 200 B.C.). *Yoga Nidra* is the yogic tranquillizer, the natural method to establish harmony and well-being throughout the entire system. It is a systemic method of inducing complete mental, physical and emotional relaxation (Amita, et. al, 2009). For absolute relaxation, one must undergo *Yoga Nidra*, the state of dynamic sleep. Research has been proved that, yogic relaxation training should be prescribed more frequently as an adjunct or alternative to conventional drug therapy for menstruation pain and disorder (Ferguson, 1981).

#### Objectives of the study:

- To understand and measure the physical problems of the adolescent girls during menstrual period.
- To find out the effects of *Surya Namaskar* on physical problems of adolescent girls during menstrual period.
- To compare the effectiveness of *Surya namaskar* and *Yoga Nidra* programme.

**Hypotheses of the Study:**

**H<sub>1</sub>:** Surya namaskar will have significantly positive effect on physical problems during menstruation of adolescent girls.

**H<sub>2</sub>:** Yoga Nidra will have significantly positive effect on physical problems during menstruation of adolescent girls.

**H<sub>3</sub>:** Suryanamaskar group and Yoga Nidra group will show similar results on physical problems of adolescent girls during menstruation.

**Methodology:**

The study is based on pre-test and post-test random group design. 180 girls of 12 to 15 years age group from Maratha High school, Nashik (India) were selected randomly and divided in three groups; two experimental and one control group (n=60 in each group). One experimental group received 24 weeks *Surya Namaskar* programme while other group received 24 weeks *Yoga Nidra* programme as a treatment. One group kept in a controlled condition. The pre-test-post-test random group design was used as a research design.

**Tools for Data collection**

A questionnaire for measuring physical problem of adolescent girls was constructed by the researcher and used as a tool for data collection. The questionnaire was based on major problems which generally seen among mature girls before and during menstruation period. It includes kinds of problem, nature, intensity of problem. The questionnaire contained 9 major physical problems viz., feeling pain during menstruation, feeling pain before menstruation, abdominal pain, leg, calf & thigh pain, vomiting feeling & improper eating, backache, skin problems, headache and extra bleeding. Numerical Rating Scale (NRS) consists of a range from 0 to 3 from which the participant selects the number most representative of intensity of her problem (0 = Not at all, 1 = low intensity, 2=medium intensity and 3= high intensity). The reliability of the questionnaire is 0.8 measured by test-retest method. Expert's opinions were obtained to establish the validity of the questionnaire.

**Yogic Interventions:**

The *Surya Namaskar* and *Yoga Nidra* practices were given to participants for 6 days per week in morning session for 60 minutes.

*Surya Namaskar* referred by Balasaheb Pant Pratinidhi, Aundh, having 10 poses was selected for training because the school syllabus has this type of *Surya Namaskar*. The programme

includes pre-yogasana movements, *Surya Namaskar*, *Savasana*, deep breathing and *Bhramari Pranayama*. Each round of *Surya Namaskar* is done after the utterance of 'Omkaara' with the appropriate 'Bija Mantra' along with the name of the Sun which corresponds to the *chakra* in the body in ascending order. There are 14 Mantras. They are specific sounds believed to subtle effects have on different systems and parts of the body.

*Yoga Nidra* intervention developed by Swami Satyananda Saraswati, School of Yoga, Munger, Bihar, India is used for the present study. The final protocol consisted *Omkaara*, pre-yogasana movements, *Yoga Nidra* (30 min per day), *Savasana*, deep breathing and *Bhramari Pranayama*.

#### Results:

Data collected through questionnaires was analyzed and described by mean and standard deviation. The comparison between groups was done by one way ANOVA while superiority of groups is checked with the help of Scheffi's post-hoc test.

Table 1

Descriptive statistics of physical problems during menstrual period score

Variables	Groups	Tests	N	Mean	SD	Std. Error
Feeling any pain during menstruation	SNG	Pre	60	2.77	0.427	0.055
		Post	60	0.98	0.129	0.017
	YNG	Pre	60	2.42	0.497	0.064
		Post	60	1.52	0.504	0.065
	CG	Pre	60	2.60	0.494	0.064
		Post	60	2.50	0.537	0.069
Feeling any pain before menstruation	SNG	Pre	60	2.67	0.572	0.074
		Post	60	0.83	0.376	0.049
	YNG	Pre	60	2.38	0.490	0.063
		Post	60	1.52	0.504	0.065
	CG	Pre	60	2.63	0.486	0.063
		Post	60	2.55	0.534	0.069
Abdominal pain	SNG	Pre	60	2.82	0.390	0.050
		Post	60	0.60	0.494	0.064
	YNG	Pre	60	2.35	0.481	0.062
		Post	60	1.45	0.502	0.065
	CG	Pre	60	2.60	0.494	0.064
		Post	60	2.63	0.486	0.063
Leg, calf & thigh pain	SNG	Pre	60	1.75	1.002	0.129
		Post	60	0.27	0.482	0.062

Vomiting feeling & not eating properly	YNG	Pre	60	2.45	0.502	0.065
		Post	60	1.57	0.500	0.065
	CG	Pre	60	2.45	0.502	0.065
		Post	60	2.35	0.481	0.062
	SNG	Pre	60	2.05	0.790	0.102
		Post	60	0.37	0.486	0.063
Backache	YNG	Pre	60	2.42	0.497	0.064
		Post	60	1.48	0.504	0.065
	CG	Pre	60	2.52	0.504	0.065
		Post	60	2.45	0.502	0.065
	SNG	Pre	60	2.75	0.437	0.056
		Post	60	0.55	0.502	0.065
Skin problem, acne & pimple problem	YNG	Pre	60	2.60	0.494	0.064
		Post	60	1.52	0.504	0.065
	CG	Pre	60	2.60	0.494	0.064
		Post	60	2.53	0.503	0.065
	SNG	Pre	60	2.72	0.555	0.072
		Post	60	0.33	0.475	0.061
Extra bleeding	YNG	Pre	60	2.52	0.504	0.065
		Post	60	1.42	0.497	0.064
	CG	Pre	60	2.50	0.504	0.065
		Post	60	2.43	0.500	0.065
	SNG	Pre	60	2.73	0.446	0.058
		Post	60	0.15	0.360	0.046
Headache	YNG	Pre	60	2.55	0.502	0.065
		Post	60	1.45	0.502	0.065
	CG	Pre	60	2.53	0.503	0.065
		Post	60	2.47	0.566	0.073
	SNG	Pre	60	2.33	0.655	0.085
		Post	60	0.02	0.129	0.017
Total score of physical problems	YNG	Pre	60	2.58	0.497	0.064
		Post	60	1.35	0.481	0.062
	CG	Pre	60	2.67	0.475	0.061
		Post	60	2.60	0.527	0.068
	SNG	Pre	60	22.58	1.639	0.212
		Post	60	4.10	0.775	0.100
YNG	Pre	60	22.27	2.881	0.372	
	Post	60	13.27	3.251	0.420	
CG	Pre	60	23.10	3.074	0.397	
	Post	60	22.52	3.028	0.391	

Table no. 1 represents descriptive statistics of pre and post-tests of three groups, viz., *Surya Namaskar* group (SNG), *Yoga Nidra* group (YNG) and Control group (CG).

Table 2

ANOVA for Change in physical problems during menstruation period score of physical problem test

Variables		Sum of Squares	df	Mean Square	F	Sig.
Feeling any pain during menstruation	Between Groups	85.078	2	42.539	147.683	0.000*
	Within Groups	50.983	177	0.288		
	Total	136.061	179			
Feeling any pain before menstruation	Between Groups	92.211	2	46.106	116.832	0.000*
	Within Groups	69.850	177	0.395		
	Total	162.061	179			
Abdominal pain	Between Groups	154.211	2	77.106	244.728	0.000*
	Within Groups	55.767	177	0.315		
	Total	209.978	179			
Leg, calf & thigh pain	Between Groups	57.744	2	28.872	46.220	0.000*
	Within Groups	110.567	177	0.625		
	Total	168.311	179			
Vomiting feeling & not eating properly	Between Groups	78.544	2	39.272	73.596	0.000*
	Within Groups	94.450	177	0.534		
	Total	172.994	179			
Backache	Between Groups	136.633	2	68.317	216.251	0.000*
	Within Groups	55.917	177	0.316		
	Total	192.550	179			
Skin problems, acne & pimple problems	Between Groups	161.633	2	80.817	225.921	0.000*
	Within Groups	63.317	177	0.358		
	Total	224.950	179			
Extra bleeding	Between Groups	192.033	2	96.017	328.617	0.000*
	Within Groups					

	Within Groups	51.717	177	0.292		
	Total	243.750	179			
Headache	Between Groups	151.944	2	75.972	218.83	0.000
	Within Groups	61.450	177	0.347	0	*
	Total	213.394	179			
Total Score of Physical problems	Between Groups	9623.678	2	4811.839	598.28	0.000
	Within Groups	1423.567	177	8.043	3	*
	Total	11047.244	179			

\* Statistically significant at 0.01 level of significance

ANOVA test is applied for comparing the means of change in post and pre test score of physical problems of experimental and control groups. From table no. 2, it can be seen that there is significance differences found between and within groups at 0.01 significance level ( $p = 0.000$ ) for each component of physical problem test.

**Table 3**

Scheffe's post hoc test for Change in Physical Problems score of physical test

Variables	Group (I)	Group (J)	Mean Difference (I-J)	Std. Error	Sig.
Feeling pain during menstruation	SNG	YNG	0.883	0.098	0.000*
		CG	1.683	0.098	0.000*
	YNG	SNG	-0.883	0.098	0.000*
		CG	0.800	0.098	0.000*
Feeling pain before menstruation	CG	SNG	-1.683	0.098	0.000*
		YNG	-0.800	0.098	0.000*
	SNG	YNG	0.967	0.115	0.000*
		CG	1.750	0.115	0.000*
Abdominal pain	YNG	SNG	-0.967	0.115	0.000*
		CG	0.783	0.115	0.000*
	CG	SNG	-1.750	0.115	0.000*
		YNG	-0.783	0.115	0.000*
Leg, calf and thigh	SNG	YNG	1.367	0.102	0.000*
		CG	2.250	0.102	0.000*
	YNG	SNG	-1.367	0.102	0.000*
		CG	0.883	0.102	0.000*
CG	SNG	-2.250	0.102	0.000*	
	YNG	-0.883	0.102	0.000*	

		CG	1.383	0.144	0.000*
	YNG	SNG	-0.600	0.144	0.000*
		CG	0.783	0.144	0.000*
	CG	SNG	-1.383	0.144	0.000*
		YNG	-0.783	0.144	0.000*
Vomiting feeling and eating improper	SNG	YNG	0.750	0.133	0.000*
		CG	1.617	0.133	0.000*
	YNG	SNG	-0.750	0.133	0.000*
		CG	0.867	0.133	0.000*
	CG	SNG	-1.617	0.133	0.000*
		YNG	-0.867	0.133	0.000*
Backache	SNG	YNG	1.117	0.103	0.000*
		CG	2.133	0.103	0.000*
	YNG	SNG	-1.117	0.103	0.000*
		CG	1.017	0.103	0.000*
	CG	SNG	-2.133	0.103	0.000*
		YNG	-1.017	0.103	0.000*
Skin problems, acne & pimple problems	SNG	YNG	1.283	0.109	0.000*
		CG	2.317	0.109	0.000*
	YNG	SNG	-1.283	0.109	0.000*
		CG	1.033	0.109	0.000*
	CG	SNG	-2.317	0.109	0.000*
		YNG	-1.033	0.109	0.000*
Extra bleeding	SNG	YNG	1.483	0.099	0.000*
		CG	2.517	0.099	0.000*
	YNG	SNG	-1.483	0.099	0.000*
		CG	1.033	0.099	0.000*
	CG	SNG	-2.517	0.099	0.000*
		YNG	-1.033	0.099	0.000*
Headache	SNG	YNG	1.083	0.108	0.000*
		CG	2.250	0.108	0.000*
	YNG	SNG	-1.083	0.108	0.000*
		CG	1.167	0.108	0.000*
	CG	SNG	-2.250	0.108	0.000*
		YNG	-1.167	0.108	0.000*
Total score of physical problems	SNG	YNG	9.483	0.518	0.000*
		CG	17.900	0.518	0.000*
	YNG	SNG	-9.483	0.518	0.000*
		CG	8.417	0.518	0.000*
	CG	SNG	-17.900	0.518	0.000*
		YNG	-8.417	0.518	0.000*

\* Statistically significant at 0.01 level of significance

Table 3 represents mean difference of change in means of physical problems after experiment between SNG and YNG; SNG and CG as well between YNG and CG. There were



significant differences found between these groups at 0.01 level of significance for all the nine components of physical problem test.

It can be seen from above table that, both Suryanamskar and Yoga Nidra group shows similar, significant and positively affect on physical problems during menstrual period and are helpful to reduce these problems.

Hence, **alternative hypotheses H<sub>1</sub>, H<sub>2</sub> and H<sub>3</sub> are accepted by researcher.**

### Discussion :

Researcher observed positive effects of *Surya Namaskar* and *Yoga Nidra* on physical problems of adolescent girls during menstruation. *Surya Namaskar* programme shows positive results in reducing pain and other physical problems. It may be because *Surya Namaskar* comprises of asanas i.e. physical exercise as well as breathing exercise and relaxation. Nag, et al (2013) has also found significant effect of 3 months yoga interventions including *Surya Namaskar* with primary dysmenorrhoea (painful menstruation). While *Surya Namaskar* is a physical exercise in which about 90 % to 95 % of body muscles are stretched and activated. As *Surya Namaskar* tones up the nervous system by stretching and bending the spinal column and regulates the sympathetic and parasympathetic nervous systems, it controls activities in the uterus and ovaries, increases spine and waist flexibility which helps in reducing muscular pain, abdominal pain and backache as well as in regulating normal flow. As well as it refreshes skin and clears complexions reducing skin, pimple problems. Alternate contraction and relaxation of abdominal muscles tone up the abdominal organs and improves their functions. Especially organs of digestive system are benefited (Barsing & Mishra, 2015; Nandar & Urs, 2014).

According to Sharma, Taneja & Sharma (2008), the relaxation was also accomplished by activation of antagonist muscle groups. Strengthening of weekend muscles and correction of faulty postures is an established pain relieving method. Hence *Yoga Nidra* also showed positive results on pains occurring during menstruation of adolescent girls. Findings of the present study are supported by a study conducted at East Texas University (USA), in which researchers concluded that yogic relaxation training should be prescribed more frequently as an adjunct or alternative to conventional drug therapy for menstrual pain and disorder (Ferguson, 1981).

*Yoga Nidra* probably relieves pain by stimulating the pituitary gland to release its own potent pain suppressing compounds especially in migraine (Sargent, Green and Walters, 1973; Silver, et al. 1979) and chronic arthritic pain (Varni, 1981). In a study conducted at East Texas University (USA),

researchers concluded that yogic relaxation training should be prescribed more frequently as an adjunct or alternative to conventional drug therapy for menstrual pain and disorder (Ferguson, 1981).

The study (Rani, et al., 2013) demonstrated that, *Yoga Nidra* practice was helpful in patients with hormonal imbalances, such as dysmenorrhea, oligomenorrhea, menorrhagia, metrorrhagia, and hypomenorrhea. Khushbu, et al. (2011) has found significant improvement in pain symptoms ( $P < 0.006$ ), gastrointestinal symptoms ( $P < 0.04$ ) ( $P < 0.02$ ) and urogenital symptoms ( $P < 0.005$ ) in patients with menstrual disorder after 6 months of *Yoga Nidra* therapy in intervention group in comparison to control group. These references strongly support the findings of the study. *Yoga Nidra* intervention in the present study evident to relieve pains during and before menstruation, improves digestive functions (reduces vomiting feeling and improves eating) and regulates normal blood flow during menstruation.

#### Conclusions:

It is concluded from the results of the study that, both Suryanamaskar and *Yoga Nidra* programme reduces physical problems viz., pains (abdominal pain, leg, calf, thigh pain, backache, headache) during and before menstruation, vomiting feeling, improper eating, extra bleeding, and skin problems (acne & pimple problems) effectively in 24 weeks.

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