The Effect Of 61-Point Relaxation Technique Training On Stress Parameters In Premenstrual Syndrome Patients After Cold Pressor Test Induced Stress : A Randomized Controlled Trial

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Abstract: Background : Premenstrual syndrome is said to be a psycho neuro endocrine disorder with biological , psychological components along with stress as a major cause. Stress is a common condition , a response to a physical threat /psychological distress that generates a host of chemical & hormonal reactions in the body . Yoga is a unique method for balancing two components of autonomic nervous system & influencing psychological & stress related disorders . Objective : To assess and compare the effect of 61 - point relaxation technique on systolic BP, diastolic BP, Heart Rate & Respiratory Rate in patients of PMS before and after intervention and compare the effect of 61 - point relaxation technique on SBP, DBP & Heart Rate in persons with and without premenstrual syndrome . **Method:** A total number of ninety two women in reproductive age group were studied in premenstrual phase of menstrual cycle . Cold pressor test was used to assess sympathetic activity . Basal parameters including systolic BP , diastolic BP , heart rate and respiratory rate were recorded before & after cold pressor test in both control & study group before & after 61- point relaxation technique . **Results :** Basal systolic blood pressure, diastolic blood pressure heart rate and respiratory rate of females with premenstrual syndrome was significantly higher than the control subjects (p- value 0.0056, 0.0048, 0.0046 and 0.0057) respectively, suggesting the presence of stress in females with premenstrual syndrome . Immediately after cold pressor test, the said parameters were statistically significantly more raised in premenstrual syndrome group than control group (p value 0.0005, 0.0006, 0.0004,0.0037) respectively. Following 1 week of 61-point relaxation technique training , the control group showed a significant decline in systolic blood pressure, diastolic blood pressure heart rate and respiratory rate (p 0.0476, 0.0385 , 0.0334 , 0.0231) respectively. However, the premenstrual syndrome group showed a statistically highly significant reduction in systolic blood pressure, diastolic blood pressure , heart rate and respiratory r ate (p value 0.0043 ,0.0067 ,0.0023 , 0.0012) respectively immediately after cold pressor test. **Conclusion:** These results depicts a decline in sympathetic activity by 61- point relaxation training and it can be used as an efficient relaxation tool to reduce the premenstrual stress .

Key words : premenstrual syndrome , 61 point relaxation training ,cold pressor

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Introduction: Modern age is the age of stress & stress induced disorder pose biggest challenge to the society. Stress disturbs the equilibrium between two arms of autonomic nervous system i.e. sympathetic & parasympathetic system[1].

The sympathetic system responds quickly to stressful situations & leads to increased heart rate blood pressure etc [2] . Too much stress or continuous stress with no respite for body & mind can interfere with numerous physical & mental abilities.

A woman is considered to have premenstrual syndrome if she complains of recurrent psychological or somatic symptoms (or both) occurring specifically during the late luteal phase of menstrual cycle & which resolve in follicular phase of menstrual cycle[3]. Premenstrual Syndrome is a psycho- neuro- endocrine stress related disorder & more than 300 treatment modalities for PMS show that existing remedies have not provided satisfactory help to relieve PMS (Premenstrual Syndrome [4,5]

Yoga is a profound physical , emotional & cognitive experience & each of these is capable of influencing brain[6] . The 61 point relaxation exercise is a successful means of stress relaxation & is expected to relieve PMS also as premenstrual syndrome is said to be a stress related disorder[7].

The ancient yogic scriptures write about many variants of shavasans (relaxation technique) . Shavasana is a well established technique of Hath yoga to relax the mind & body. Swami Ram of the Himalayan International Institute of Yoga Science & Philosophy developed a modification of shavasana & named it 61- point relaxation

exercise. The 61- point relaxation exercise is a successful means of stress relaxation & is expected to relieve premenstrual syndrome as well [8].The 61- point relaxation technique affects the sympathetic & parasympathetic components of autonomic nervous system thereby influencing the vital physiological functions that govern heart rate, blood pressure respiratory rate etc[9]. Yoga is a unique method for balancing autonomic nervous system & influencing psychological & stress related disorders. The 61 point relaxation exercise is a successful means of stress relaxation and is expected to relieve PMS as well[10].

Material & Method: The present study was carried out on ninety two females in reproductive age group (15-45years) in the Upgraded Department of Physiology , SMS Medical College Jaipur after taking detailed history and physical examination to rule out any acute or chronic ailment . A detailed written informed consent was taken before inclusion in the envisaged study . Premenstrual syndrome cases were clinically diagnosed subjects from Mahila chikitsalaya Sanganeri gate Jaipur . Females suffering from medical or psychiatric illnesses were excluded . Subjects were divided into two subgroups

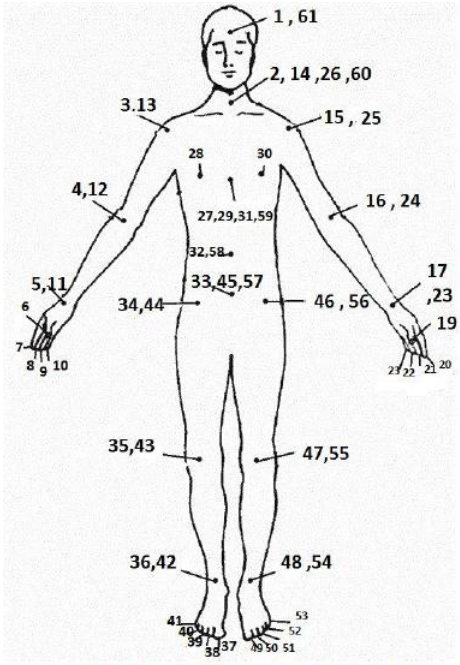
Group 1: comprised of diagnosed cases of premenstrual syndrome (46)
Group 2 : comprised of females not suffering from premenstrual syndrome (46)

The procedure was non invasive and study plan was approved by ethical committee SMS Medical College and attached Hospitals , Jaipur. All the females were having normal regular menstrual cycles and were not taking any medication .

Experimental protocol: The subjects were asked to report in department of Physiology SMS Medical College in morning 9-10 AM . Room temperature was maintained in thermo neutral zone.

Basal systolic blood pressure, diastolic blood pressure and heart rate were recorded using automated sphygmomanometer (Panasonic , Omron) . The respiratory rate was also noted.The subject was then asked to dip the right hand in cold water (temperature 2-8^0 C) for two minutes . After taking the hand out from cold water blood pressure and heart rate were recorded immediately, after 1 min and after 5 min from left arm.

The subjects were asked to report for relaxation technique 10-11 days before the expected onset of next menses . The training was given at the same time over a period of one week .



61 POINT RELAXATION TECHNIQUE

The subject was made to lie down in supine posture . the feet were kept about a foot apart with palms facing up . A small pillow was allowed to be used under the head if desired . Eyes had to be kept closed .
The commands were given to relax over 8-10 minutes . The subjects were asked to concentrate for about 10 seconds upon the narrated 61 points and imagine a cool intense sharp blue light over these points . The awareness over the focused point causes its relaxation .The subject is asked to become aware of the surroundings and gradually open the eyes .

On the last day of training cold pressor test was done again and blood pressure, heart rate and respiratory rate recordings were taken. After taking observations, mean and standard deviation were calculated and case group and control group were compared with the help of student's paired and unpaired t test. Data was analysed with the aid of Microsoft excel

worksheet (Microsoft office 2007) . p value < 0.05 was assigned significant .

Results: Basal systolic blood pressure, diastolic blood pressure heart rate and respiratory rate of females with premenstrual syndrome was significantly higher than the control subjects with p- value 0.0056, 0.0048, 0.0046 and 0.0057 respectively, suggesting the presence of stress in females with premenstrual syndrome . Immediately after cold pressor test, the above parameters were statistically significantly more raised in premenstrual syndrome group than control group (p value 0.0005, 0.0006, 0.0004,0.0037) respectively. The results are also summarised in following tables.

Table 1: Mean change in systolic blood pressure after intervention

S.NO.	Systolic blood pressure	Control Group (Mean ± SD)	Study Group (Mean ± SD)	P Value LS
1	Resting	1.51 ± 2.65	6.07±4.76	0.001***
2	Immediately	1.49 ± 2.76	5.58±5.06	0.0056***
3	1 Minute	1.2 ± 2.92	6.13±5.98	0.0046***
4	5 Minutes	0.96 ± 3.25	7.82±4.76	0.0341**

Table no. 1 outlines mean ± SD change in systolic BP for control & study group after 61- point relaxation technique . Highly significant change was observed in study group as compared to control group.

Table 2: Mean change in diastolic blood pressure after intervention

S.NO.	Diastolic blood pressure	Control Group (Mean ± SD)	Study Group (Mean ± SD)	P Value LS
1	Resting	2.84 ± 2.54	5.58±4.09	0.0052***
2	Immediately	1.71 ± 2.99	7.09±3.89	0.0045***
3	1 Minute	0.71 ± 2.99	4.44±3.95	0.0036***
4	5 Minutes	1.67 ± 3.05	5.00±2.82	0.043**

Table no. 2 outlines mean ± SD change in diastolic BP for control & study group after 61 point relaxation technique . Highly significant change was observed in study group as compared to control group.

Table 3: Mean change in heart rate after intervention

S.NO.	Heart rate	ControlGroup (Mean ± SD)	Study Group (Mean ± SD)	P Value
1	Resting	3.24 ± 2.01	7.36±2.84	0.0034***
2	Immediately	1.29 ± 2.46	6.38±2.87	0.0045***
3	1 minute	1.29 ± 2.46	6.09±2.95	0.018**
4	5 minutes	2.29 ± 2.46	7.06±3.69	0.0076***

Table no.3 depicts mean ± SD change in heart rate for control & study group after 61 point relaxation technique . Highly significant change was observed in study group as compared to control group

Table 4: Mean change in respiratory rate after intervention

S.NO.	Respiratory rate	Control Group (Mean ± SD)	Study Group (Mean ± SD)	P Value
1	Resting	1.56 ± 2.26	3.82±1.18	0.0432**
2	Immediately	1.31 ± 2.18	4.29±1.77	0.0034***
3	1 Minute	1.02 ± 2.25	3.87±1.53	0.0045***
4	5 Minutes	1.69 ± 2.36	3.76±1.30	0.0065***

p value < 0.05 – significant ,*p value < 0. 01 –highly significant

Table no. 4 outlines change in mean ± SD respiratory rate for control & study group after 61 point relaxation technique . Highly significant change was observed in study group as compared to control group . Study group showed higher change in mean values of respiratory rate after 61 point relaxation technique.

Discussion : The present study was undertaken to assess the efficiency of one week training of 61- point relaxation technique after cold

pressor test induced stress in premenstrual syndrome .

Benson et. al. concluded in a study that relaxation technique reduces blood pressure while Madanmohan et al studied modulation of CPT induced stress by shavasana[12]. They observed a significant reduction in heart rate[13] .The above results also corroborates with the findings of studies of Manhem K. Jern et al .

In present study, significant changes in systolic blood pressure , diastolic blood pressure , heart rate & respiratory rate in control group after 1 week training of 61 - point relaxation technique, were observed . The relaxation reduces the abnormally high sympathetic activity and causes decline in the blood pressure and is a proven treatment for high blood pressure[14].

Respiration slows down naturally during the course of relaxation . Relaxation diminishes the activity of the sympathetic nervous system in the bronchioles and increases parasympathetic activity [15]. Sympathetic and parasympathetic systems together act on the smooth muscles encircling airways , sympathetic system causing them to constrict and thereby increases the resistance to airflow . These findings are comparable with the observations of Goodale et al .

Highly significant changes were observed in systolic blood pressure , diastolic blood pressure , heart rate & respiratory rate in study group after 1-week training of 61 - point relaxation technique .

Significant higher heart rate , systolic blood pressure ,diastolic blood pressure and respiratory rate in resting state ,immediately , 1 min , 5 min after cold pressor test in premenstrual phase is because of higher sympathetic activity due to premenstrual stress [16] . Changes in the autonomic functions may be responsible for some the symptoms produced through endorphins and have been responsible for some of the behavioural changes . Hasrtup et al also reported the significant rise in heart rate , systolic and diastolic blood pressure in premenstrual phase [17] . Increased blood pressure due to premenstrual stress is due to increase in peripheral resistance and mediated by adrenocortical stimulation . This could be due to increasing sympathetic activity or elevation of circulating catecholamine while rennin angiotensin aldosterone system also causes elevation of blood pressure . Rise in blood pressure is important sympatho -adrenal response to physiological stressful experience caused by premenstrual stress .

The findings of present study corroborates with study of Bhavnani et al. The decrease in various parameters can be due to normalisation of autonomic cardiovascular rhythms due to either improved vagal tone and reduced sympathetic activity and normal baroreflex sensitivity [18] .

According to study done by Tamki , women with greater degree of premenstrual stress possess higher sympathetic activity in late luteal phase than without premenstrual stress [19] . The cold pressor test causes cold stress which leads to sympathetic activation and thereby raises the blood pressure . The rise in blood pressure is also possibly contributed to release of some other factors like endothelin -1 , prostaglandins and angiotensin II. Altered functioning of autonomic nervous system in the late luteal phase could be associated with diverse psychosomatic or behavioral symptoms appearing pre menstrually. The subjects also reported subjective improvement in mood and behavioural symptoms [20] . In a study by Telles S Gaur , it was reported that practising yoga alleviates depression and other mental symptoms in patients who were symptomatic [21] . The twelve week yoga intervention was associated with greater improvements in mood and lower anxiety compared to a metabolically active walking exercise group as concluded by Streeter et al [22] .

In a study by Rao et al there was reduction in mental symptoms in patients with early breast cancer undergoing conventional treatment compared to a non yoga group [23].

Conclusion : In the present study it was observed that increased sympathetic activity contributes to the stress in pre - menstrual syndrome. The relaxation technique resulted in decline in parameters (systolic blood pressure , diastolic blood pressure , heart rate & respiratory rate) after cold pressor test induced stress . So, Relaxation technique may be

recommended as an adjuvant therapy to tilt the autonomic nervous system balance to parasympathetic dominance to get relieved from pre menstrual symptoms.

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