



EFFECT OF SURYANAMASKARA ON POSITIVE AND NEGATIVE EMOTIONS IN COLLEGE STUDENTS- A RANDOMISED CONTROLLED TRIAL

Usha A G., Vijaykumar P S and Sahana A U

S-VYASA Yoga University, Bangalore

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ABSTRACT

Background: Suryanamaskara is a traditional method of yogic practice that offers prayer to sun god which involves various physical postures with breathing and relaxation. Suryanamaskara also involves variety of forward and backward bends, these movements stretch the spinal column and massage, tone and stimulate vital organs through alternately flexing the body forwards and backwards (Kristine M.Fondran)

Purpose: The present study has been designed to know the effects of suryanamaskar on positive and negative emotions and perceived stress of college students by making them practice for 30 days.

Methods: A Randomized Controlled Trial. Data normally distributed (significance P Value .05). Sample size of 60 between the age group 18 and 19 years belonging to both genders were randomly selected. They were randomly allocated to 2 groups with 30 students of each (experimental and control group). Subjects were assessed at the beginning and at the end of 30 days of intervention using positive and negative affect schedule (PANAS-SF), the Perceived Stress Scale, a stress assessment instrument.

Results: The data were normally distributed ($P > .05$). Both pre and post data were analysed using parametric paired sample 't' test. The baseline data across the groups were not statistically different ($P > .05$). Post +ve effect ($p < .05$), post-ve effect ($P < .05$) statistically significant, whereas post PSS ($P > .06$) but still showed the signs of improvements though it is statistically not significant.

Conclusion: The Null Hypotheses was rejected as the result proved that the practice of suryanamaskara among college students showed significant improvements at their emotional levels as well as stress levels. The result was very much evident that the suryanamaskara performed with perfect breathing pattern and relaxation has positive effects at the emotional and stress level.

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INTRODUCTION

College students are vulnerable to a critical period in developmental maturation, facing rigorous academic work, and learning how to function independently, peer pressure, hormonal changes in the physical body. Stress affects college students physical mental, social and intellectual health. College students will not always possess the necessary stress management skills and coping strategies. Physical activity is one coping strategy that is perhaps underutilized by many college students. College students often have low levels of physical activity. Many systematic reviews and different studies on effects of yoga for stress management in college students revealed positive effects of yoga on stress reduction in college students. (Thangavel D *et al* 2014),

(Goldstein M R *et al* 2016), (Brems C *et al* 2016). Yoga is an ancient physical and mental activity that affects moods and stress. A comparative study on kundalini yoga and cognitive behavior therapy revealed that both are promising stress reduction techniques. Yoganidra was used in schools for disruptive behavior, where participants' breathing was stabilized during and after yoganidra (Granath J, *et al* 2006). Yoganidra also helped yoga students decrease regression and guilt levels (Jensen PS, *et al* 2012). Sedentary lifestyles due to increase in technology and labor saving devices leading towards mental tensions, worries, lesser physical activity. This has led to a situation in which mental and physical ill health is increasing. Extremely stressful situation may lead to showing their emotions in a way that is not characteristic of their self. Psychological ill-being is related to discontentment, dissatisfaction, frustration with other psychological problems. The life, to such persons, may seem unhappy, insecure and without meaning and they may experience negative affect and psychological conflict. Physical and mental cleansing and

*Corresponding author: **Usha A G**
S-VYASA Yoga University, Bangalore

strengthening is one of yoga's most important achievements (Manju Deorari *et al*)

Surya namaskara an ancient practice of saluting the Sun God. Salutation to sun god involves various physical postures, breathing pattern, relaxation etc. regular and sustained practice of suryanamaskara ensures a stable and steady backbone. It can either be performed thirty minutes prior to sunrise or sunset. It can be performed fast or slow pace. As per scriptures, if performed accurately, it does not cause strain and injury. It can be performed either in the morning or in the evening before the sun rise and before sun set. If performed in the morning it relieves stiffness, revitalizes the body, refreshes the mind and purifies the nadis (Parag Javadekar *et al*)

All living beings, animals and plants have their center of life in the sun at all stages, life exists on account of the sun he is the basis of divest facts of life. he is the only in the world sun is the who removes darkness. Sun salutation is traditional Indian custom of praying the sun god in the early hours of the morning with a set of postures with regulated breathing by which one can attain physical, mental and spiritual wellness (Sraswati SS 2002) Surya namaskara is a wonderful physical activity combined with twelve postures along with regulated breathing and relaxation.

Suryanamaskara practice was found to be effective on the levels of emotional maturity and Psychological well-being. The null hypotheses were rejected at .01 level of confidence. For emotional maturity the value of 't' is 3.08 and for psychological well-being the value of 't' 2.99. both values are greater than the value at .01 level, thus proving yoga balances, harmonizes and brings integration between physical and mental health. (Bhavanani A B *et al* 2011)

Earlier studies shows that suryanamasakara can be an ideal aerobic physical activity as it involves both stretching and slow dynamic component of exercise with optimal stress on the cardio respiratory system.

A later study assessed the cardio-respiratory and metabolic responses of four rounds of surya namaskar, a typical amount performed by practitioners, to determine its potential as a training and weight loss tool. It was found that participants exercised at 80% of age-predicted maximal heart rate (HR max) during round 2, 84% during round 3, and 90% during round 4. Average intensity during the four rounds was 80% HRmax, sufficient to elicit a cardio respiratory training effect. Oxygen consumption averaged 26ml/kg/min during each round, resulting in an energy expenditure of 230kcal during a 30 min session for a 60 kg individual. These findings support the use of suryanamaskar as an effective physical activity recommended by the American College of Sports Medicine. While another single report showed its influence on children belonging to 8-14 years of age. The results showed that the systolic blood pressure, peak expiratory flow rate and forced vital capacity increased significantly and respiratory rate, heart rate and diastolic blood pressure decreased significantly after the practice of suryanamaskara.

Surya namaskara is a wonderful physical activity for even the most active individuals, who have to spend a lot of mental energy. Regular practice of sun salutation regulates pin gala nadi, thus leading to a balanced energy system at both the mental and physical levels. Through the practice of suryanamaskar our breathing pattern can develop a habitual

steadiness. The present study is designed to evaluate the influence of suryanamaskara on positive and negative emotions in college students.

MATERIALS AND METHODS

The design of the study A Randomised Controlled Trial (RCT) The study was conducted at shantiniketan college, bilekahalli, Bangalore, India. The management and the Principal of the Shanthiniketan college approved the study protocol.

A study in which people are allocated at random to receive one of the interventions. The control with no intervention at all [8]. Subjects: 60 subjects were selected up and were divided into two groups namely, Experimental and controlled groups. 30 subjects were allocated to each group, Group of 30 subjects were given the practice of loosening exercise, 12 rounds of suryanamaskara and DRT (45 min in total) for about 30 days (intervention group)

Inclusion criteria

Normal healthy students studying in 2nd PUC with ages ranging between 18 to 19 years, belonging to both genders. Attending the sessions regularly, to be able to understand and read English for completing questionnaires.

Exclusion criteria

Students who were not interested were excluded from the study. Unstable medical and psychiatric condition students were excluded.

Plan of analysis

The data were assessed for normality distribution using the Shapiro Wilk test. Data was normally distributed and parametric paired sample 't' test was conducted. Significance P value being P= .05. The net scores recorded on day 30 of surya namaskar group as well as the control group were compared with their respective baseline values using a paired 't' test. The differences across the group were assessed using an independent samples 't' test.

RESULTS

Two groups assessed after thirty days of interventions using PANAS and PSS showed significant changes. The Data measured using descriptive statistics and the data was normally distributed. The pre-post data within each group was analyzed using a paired 't' test. There was a significant improvement in the positive and negative emotions, stress levels of the experimental subjects. The difference between the groups were assessed using an independent sample 't' test which was statistically significant in case of positive and negative emotions whereas it was slightly positive in case of stress levels but it wasn't statistically significant. In case of controlled group there were no changes observed. P<.05 in case of positive and negative emotions i.e., P=.000, thereby rejecting the null hypotheses in case of experimental group. Whereas in control group P>.05, proving that suryanamaskar practiced regularly will improve the emotions and reduce the stress levels among college going student

Table1 Net scores recorded on Day 1 and Day 30 in both Surya Namaskara and control groups.

| variable | Yoga group | | Control group | |
|------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| | Mean and std deviation (pre) | Mean and std deviation(post) | Mean and std deviation(pre) | Mean and std deviation(post) |
| +ve effect | 27.50±5.22 | 34.47±5.65 | 26.67±7.81 | 26.73±6.07 |
| -ve effect | 26.30±5.12 | 19.07±6.05 | 24.33±6.38 | 24.70±8.50 |
| PSS | 19.67±4.34 | 16.17±4.13 | 18.10±4.71 | 19.40±5.21 |

DISCUSSION

Earlier studies have attempted to understand the physiological changes following surya namaskar. They have showed a positive change in energy cost and cardio respiratory performance in young adults. Earlier studies also shows that SN has positive physiological benefits as evidenced by changes in pulmonary function, respiratory pressures, handgrip strength and endurance, and resting cardiovascular parameters. It also demonstrates the comparative differential effects of training in SN when done in a slow and fast manner. The effects of FSN are similar to those of physical aerobic exercise with increased muscular endurance and power, whereas the effects of SSN are similar to those of Yoga training with fall in cardiovascular parameters toward lower normal values. On the basis of the present study it is recommended that SN be introduced to school children to improve their physical fitness. This was the first study comparing physiological effects of 6 months training and performance of SN in a slow and fast manner. It was speculated that surya namaskara can be used as an aerobic activity as it involves both stretching and slow dynamic component of exercise with optimal stress on the cardio-respiratory system. These findings support the use of surya namaskar as an effective physical activity recommended by the American college of sports medicine.

60 college students divided into two groups (experimental and controlled group) assessed using PANAS and PSS by giving suryanamaskara practice to the experimental group for 30 days, which showed significant improvements after one month of practice of suryanamaskara. Many students expressed their interest to continue yoga practice outside college as they felt it reduced their stress, mood swings and they felt fresh after the practice session even though it was a post lunch session. Students also expressed that they having lot study related stress.

CONCLUSION

Practice of suryanamaskara was found to be effective on the levels of positive and negative emotions and stress. The null hypotheses were rejected at 0.05 level of confidence, thus it proves that yoga brings changes at the emotional levels and improves both physical and mental health.

Practice of yoga or suryanamaskara consistently practiced for longer duration will definitely give greater mental and physical health benefits. It changes the entire lifestyle and personality of a person. Yoga has the capability to improve concentration, learning power, decision making, memory, discipline, self-control, way of thinking, tolerance level, self-confidence, social adjustment, caring for mother earth of nature. All the above said qualities are the positive repercussions of yoga through which one can explore a new in himself or herself and thus helps to change our lives in a positive and a creative way.

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By Kristine M.Fondran
By Parag Javadekar and Manjunath N.K

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