



EFFECTIVENESS OF SUDARSHAN KRIYA YOGA(SKY) ON STRESS IN UNDERGRADUATE PHYSIOTHERAPY STUDENTS AFTER 4 WEEKS- AN EXPERIMENTAL STUDY

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Abstract:

Background: Sudarshan Kriya Yoga (SKY) is a unique rhythmic breathing process advocated by Art of Living, Bangalore, India SKY is not practiced as a single technique but is integrated with asanas, pranayamas, meditations and attitude training. It has four distinct components.

- 1) Ujjayi” or “Victorious
- 2) Bhastrika or “Bellows Breath”
- 3) Om chanting
- 4) Sudarshan Kriya (Soham kriya)

According to recent study done in 2021, prevalence of stress in undergraduate physiotherapy students is 94.4% Stress is associated with SNS (Sympathetic Nervous System) overactivity and PNS (Parasympathetic Nervous System) underactivity.

Objective: Aims to find the effectiveness of Sudarshan Kriya Yoga (SKY) on stress in undergraduate physiotherapy students using Perceived Stress Scale (PSS10) after 4 weeks.

Method: Study begun with the presentation of synopsis to the ethical committee in PES MCOP. An approval was granted from the ethical committee .73 subjects were selected on the basis of inclusion and exclusion criteria. Pre PSS10 scores were taken. SKY technique was performed for 4 weeks. Post PSS10 scores were taken. Data entered and analyzed.

Results: There was significant effect of SKY technique on stress in undergraduate students ($p < 0.0001$)

Conclusion: This study concluded that there was significant effect of SKY technique on stress in undergraduate physiotherapy students after 4 weeks.

Keywords: Sudarshan kriya yoga (SKY) , undergraduate physiotherapy students , stress , PSS10 score

INTRODUCTION

- Sudarshan Kriya Yoga (SKY) is a unique rhythmic breathing process advocated by Art of Living, Bangalore, India ⁽¹⁾ SKY is not practiced as a single technique but is integrated with asanas, pranayamas, meditations and attitude training. This type of yoga is said to heal and purify from within and is a natural and non-invasive stress relieving technique ⁽¹⁾ The effect of SKY on chronic metabolic disorders has been observed via case studies by medical practitioners from different countries ⁽¹⁾
- It has four distinct components.
 - 1) Ujjayi” or “Victorious
 - 2) Bhastrika or “Bellows Breath”
 - 3) Om chanting
 - 4) Sudarshan Kriya (Soham kriya) ⁽³⁾
- Victory Breath (Ujjayi, Ocean Breath) uses a sound like one hears inside a seashell throughout inhalation and exhalation while breathing through the nose. The sound is created by a slight contraction of the laryngeal muscles and partial closure

of the glottis. This creates airway resistance and enables control of the rate of air flow such that the breath cycle can be prolonged. Three-Stage Pranayama with Ujjayi employs arm postures, a specific ratio for the duration of inhalation and exhalation phases, and breath-holds. Ujjayi tends to be calming and to produce a sense of well-being⁽¹⁰⁾

- Bhastrika involves forceful rapid deep breathing through the nose at a rate of 20 to 30 breaths per minute. Each set of 20 breaths is called a “Round.” Bhastrika is done in a seated position with the eyes and mouth closed. Three 1-min rounds of Bhastrika are each followed by 30 seconds of normal breathing. Arm movements are used to increase the force and depth of respiration. The effects include increased ventilation, circulation, and alertness⁽¹⁰⁾
- ‘Om’ chanting is done 3 times.⁽¹⁰⁾
- The translation of *Sudarshan Kriya* from Sanskrit is ‘right vision through purifying action.’ SK involves rhythmic, cyclical forms of breathing in which there are no pauses between inhalation and exhalation. During SK to time the breaths the sound so-hum (‘so’ for inhale and ‘hum’ for exhale) is used. This Kriya involves multiple rounds of slow, medium, and fast cycles with varying rhythms and intensities⁽¹⁰⁾
- Substantial amount of literature suggests that the physiotherapy education is a demanding field & students are subjected to different kinds of stressors such as the academic demands and pressures, competition for grades, social adjustment, interpersonal and family problems, uncertainty of future, lack of leisure time, coping with the high stimulating environment of college, exams, too much work load and financial concerns, unrealistic ambitions, limited opportunities, high expectations are some of the sources of stress⁽¹²⁾
- According to recent study done in 2021, prevalence of stress in undergraduate physiotherapy students is 94.4%⁽¹¹⁾ Stress is associated with SNS (Sympathetic Nervous System) overactivity and PNS (Parasympathetic Nervous System) underactivity.⁽⁶⁾
- Evidence suggests yoga breathing normalizes SNS activity and increases PNS tone as indicated by heart rate variability. Another way in which SKY training can facilitate this change in perspective is by awareness of and management of emotions through regular practice of the Kriya.⁽³⁾ The Sudarshan Kriya may provide antidote to stress by physiologically counteracting the sympathetic effects.⁽³⁾ The SKY literature states, “rather than allowing the emotions to alter the breath (and cause physiological changes which may prove unhealthy), one can skillfully use the breath to transform one's emotional state.”⁽³⁾

NEED OF STUDY

- Studies have shown that stress plays an important role in every undergraduate student's life regarding his or her behaviour, academics, relationship, family and social aspects of life⁽¹³⁾
- Stress experienced by the students is an unavoidable phenomenon which often affects their lives in the form of physical and mental health, job, and social aspects etc.⁽¹³⁾
- Prevalence rate of stress in undergraduate physiotherapy students is very high⁽¹³⁾
- Researches have proved that SKY has been effective in-
 - depression
 - increasing mental focus and awareness
 - improving emotional behaviour
 - improving immune function
 - improving lipid profile
 - improving sleep quality
 - improving respiratory function⁽¹⁴⁾
- No researches have been done to check the effect of Sudarshan Kriya Yoga (SKY) on stress in undergraduate physiotherapy students.
- This study is an attempt to check the effect of Sudarshan Kriya Yoga (SKY) on stress in undergraduate physiotherapy students.

AIM

To study the effectiveness of Sudarshan Kriya Yoga (SKY) on stress in undergraduate physiotherapy students after 4 weeks.

OBJECTIVE

To compare pre and post PSS10 score of stress in undergraduate physiotherapy students after 4 weeks of Sudarshan Kriya Yoga (SKY)

HYPOTHESIS

Null Hypothesis (H₀): There will be no significant effect of Sudarshan Kriya Yoga (SKY) on stress in undergraduate physiotherapy students.

Alternative Hypothesis (H₁): There will be significant effect of Sudarshan Kriya Yoga (SKY) on stress in undergraduate physiotherapy students.

METHODOLOGY

- STUDY DESIGN: Pre and post experimental study
- SAMPLE SIZE: 73
- SAMPLING METHOD: Purposive
- STUDY POPULATION: Undergraduate physiotherapy students aged 18-23 years
- STUDY SETTING: Physiotherapy colleges in and around Pune
- DURATION OF INTERVENTION: 4 weeks (Daily sessions for 30 mins)
- STUDY DURATION: 6 months

MATERIALS

- Consent form
- Pen
- Perceived Stress Scale
- Yoga mat
- Audio

CRITERIA

INCLUSION CRITERIA:

- Undergraduate physiotherapy students aged 18-23 years who have moderate to high perceived stress according to PSS10

EXCLUSION CRITERIA:

- Drug or alcohol addiction
- Students taking any stress relieving medications
- Diagnosed hypertension
- Recent upper or lower limb fractures

OUTCOME MEASURE

PERCEIVED STRESS SCALE (PSS)

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

Name: _____ Age: _____ Date: _____

0= Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?
0 1 2 3 4
2. In the last month, how often have you felt that you were unable to control the important things in your life?
0 1 2 3 4
3. In the last month, how often have you felt nervous and “stressed”?
0 1 2 3 4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?
0 1 2 3 4
5. In the last month, how often have you felt that things were going your way?
0 1 2 3 4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?
0 1 2 3 4
7. In the last month, how often have you been able to control irritations in your life?
0 1 2 3 4
8. In the last month, how often have you felt that you were on top of things?
0 1 2 3 4
9. In the last month, how often have you been angered because of things that were outside of your control?
0 1 2 3 4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
0 1 2 3 4

Figuring Your PSS Score:

You can determine your PSS score by following these directions:

- First, reverse your scores for questions 4, 5, 7, and 8. On these 4 questions, change the scores like this: 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0.
 - Now add up your scores for each item to get a total. My total score is _____.
 - Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress.
- ▶ Scores ranging from 0-13 would be considered low stress.
 - ▶ Scores ranging from 14-26 would be considered moderate stress.
 - ▶ Scores ranging from 27-40 would be considered high perceived stress

PROCEDURE

- The study began with a synopsis presentation in front of the ethical committee of PES Modern College of Physiotherapy
- Ethical clearance was obtained from committee
- Various colleges were visited in and around the city.
- Subjects were selected according to inclusion and exclusion criteria
- The study was explained to the students and consent will be taken from them
- The students were assessed for stress on PSS10 scale and score will be taken
- Students were taught Sudarshan kriya and practiced it daily for 4 weeks.

- Students were reassessed for stress on PSS10 scale and score was taken after 4 weeks.

PROCEDURE OF SUDARSHAN KRIYA YOGA(SKY)

SUDHARSHAN KRIYA
A guide for home practice THE ART OF LIVING

3 Stage Pranayama
Use Ujjayi breath

- 1st Stage: 4-4-6-2 (8 times)
- 2nd Stage: 4-4-6-2 (8 times)
- 3rd Stage: 4-4-6-2 (6 times)

Rest for 10 seconds after every stage

Bhastrika
Use normal deep breath

- 3 rounds: 20 times

Rest for 10 seconds after every stage

Om Chanting

- Chant OM 3 times

Sudharshan Kriya
Use normal breath

- 3 rounds: 20-40-40
- End with 10 deep breaths
- Rest/ meditate/ lie down for 10 minutes

PRANAYAMA



1ST STAGE



2ND STAGE

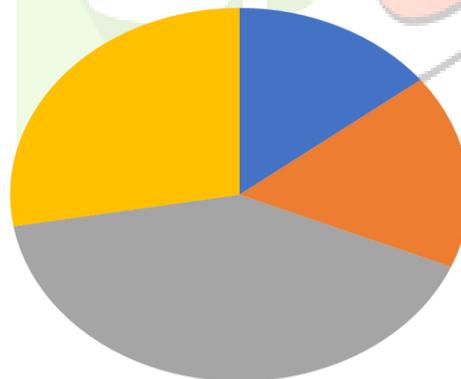
3RD STAGE

DATA ANALYSIS AND INTERPRETATION

- The data collected was statistically analysed using Microsoft Excel sheet and GraphPad.com
- Effectiveness of Sudarshan Kriya Yoga (SKY) on Perceived Stress Scale (PSS10) score was analysed using appropriate parametric test.
- Paired t test was used to obtain the difference between Pre-treatment and Post-treatment scores.
- The various statistical measures such as Mean, Standard Deviation (SD) and the test of significance were utilized to analyse the data.
- The results were concluded to be statistically Extremely significant as p value is <0.0001 .
- The data was represented in both tabular and graphical format

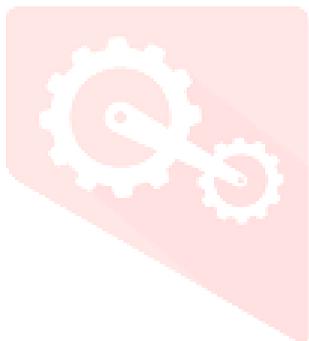
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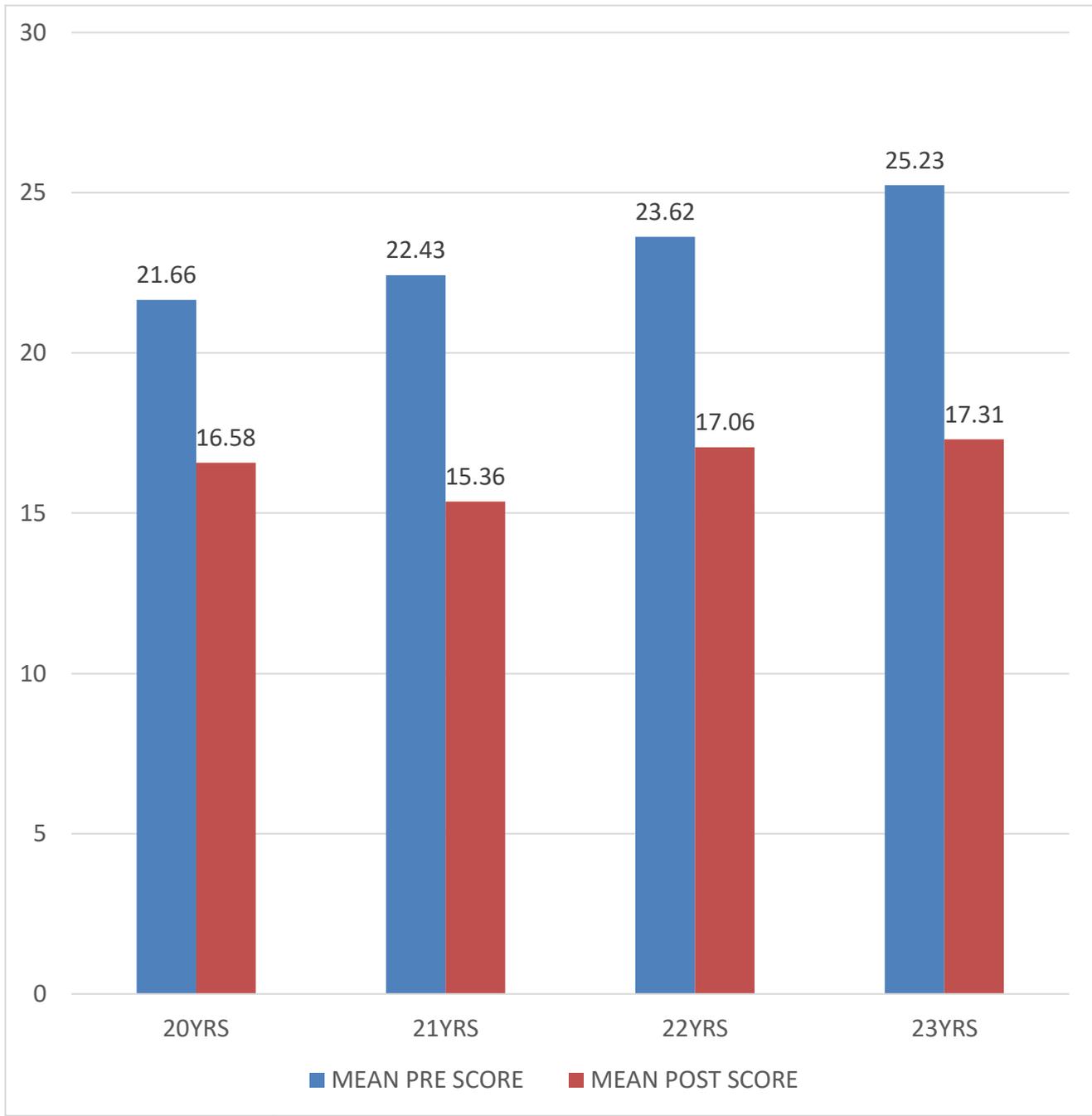
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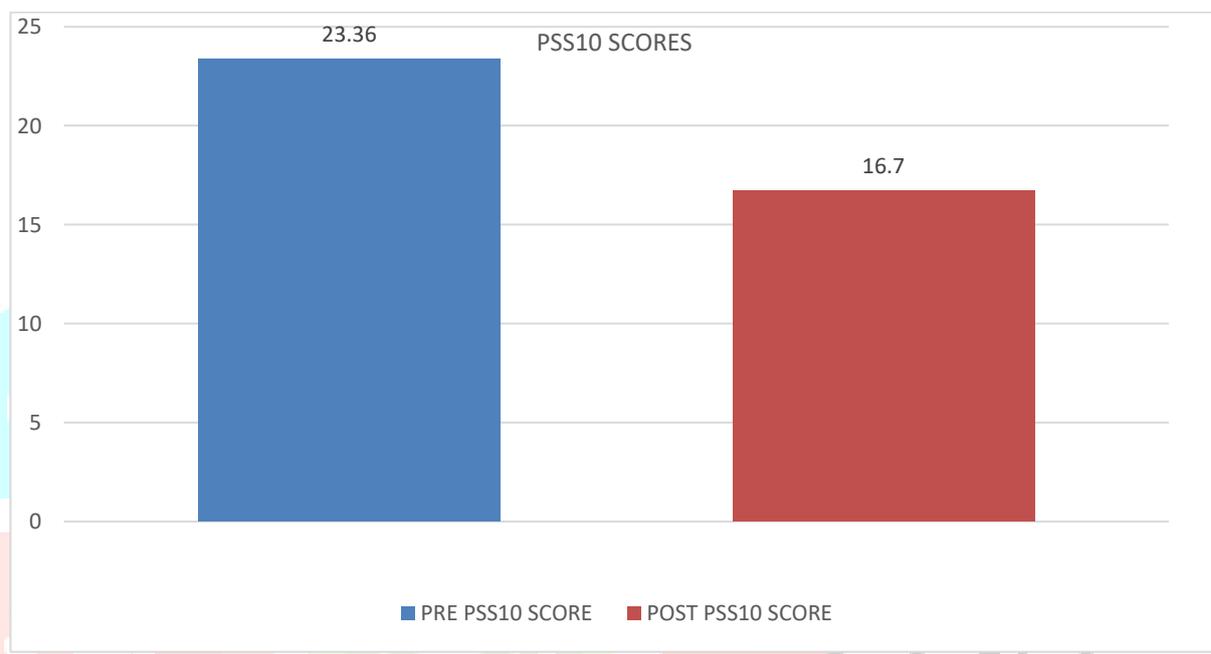
■ 20
■ 21
■ 22
■ 23

AGE	PRE-SCORE		POST -SCORE		T -VALUE	P -VALUE	RESULT
	MEAN	STD	MEAN	STD			
20 yrs	21.36	±3.82	16.58	±3.62	10.86	<0.0001	EXTREMELY SIGNIFICANT
21 yrs	22.43	±3.85	15.36	±3.99	8.21	<0.0001	EXTREMELY SIGNIFICANT
22 yrs	23.62	±4.31	17.06	±3.72	15.5	<0.0001	EXTREMELY SIGNIFICANT
23 yrs	25.23	±2.23	17.31	±3.27	8.51	<0.0001	EXTREMELY SIGNIFICANT





PRE-SCORE		POST-SCORE		T- VALUE	P- VALUE	RESULT
MEAN	STD	MEAN	STD	20.5	<0.0001	EXTREMELY SIGNIFICANT
23.36	±4.39	16.7	±3.72			



DISCUSSION

- The present study represents Sudarshan Kriya Yoga (SKY) as an intervention to cope with stress in undergraduate physiotherapy students.
- Stress occurs due to sympathetic overactivity and parasympathetic underactivity. Excessive stress can affect a student's self-esteem, sense of worth, confidence and his/her academic achievements.
- Sudarshan Kriya Yoga (SKY) is a yogic practice which includes asanas, special breathing technique and meditation. It includes 3 stage pranayama, Bhastrika, om chanting and Sudarshan kriya.
- The outcome measure used was Perceived Stress Scale (PSS10) to rate the stress.
- The PSS10 score was taken pre and post the intervention duration of 4 weeks.
- Paired t-test was used to compare pre and post PSS10 scores for all the ages which was extremely significant ($p < 0.0001$). Thus, the study concluded the effectiveness of SKY technique on stress in undergraduate physiotherapy students.
- Since, no adverse effects occurred, Sudarshan Kriya Yoga (SKY) technique seemed to be feasible as well as safe and acceptable in the sample of present study.
- Similarly, the study conducted by Renu Pandey, Gaurav Tyagi and Astha Giri on benefits of SKY on mental well-being of humans concluded that Sudarshan kriya yoga is a novel practice with scientifically proven health benefits⁽⁴⁾
- Sonu Kumar, Enam Ahmad, Vikas Kumar, Abid Ahsan conducted a study to see the effect of Sudarshan Kriya Yoga on Cardio-Respiratory Parameters in Young Adults which concluded that it has beneficial effects on cardiorespiratory physiology so it can be used as adjuvant therapy for management of lifestyle diseases such as diabetes mellitus, and psychiatric disorders⁽¹⁵⁾

CONCLUSION

This study concludes that Sudarshan Kriya Yoga (SKY) shows significant effect in reducing stress in undergraduate physiotherapy students

LIMITATIONS

- Study was done on small population.
- Lack of long term follow up

FUTURE SCOPE

- Study can be done on larger population.
- Study population can be changed.
- There can be comparison between SKY technique and other protocols.
- Group therapy can be done for the same protocol.

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