

Research Article

Evaluating the Effect of Suryanamaskar Practice on Cognitive Concentration Among University Students

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Abstract

Suryanamaskar, is a combination of breathing pattern, mental awareness, variations of Yoga asanas and focus towards specific asanas while performing and physical movement have been suggested to improve cognitive functioning and mental wellbeing. This study assessed the effect of Suryanamaskar intervention on cognitive concentration levels among university students aged between 18-25 years. The study aims to determine whether regular practice of Suryanamaskar can lead to measurable improvement in cognitive concentration ability among the students as assessed by a standard Cognitron test Vienna Test System. The study incorporated a pre-post-test design with a convenience sample of 20 university students who underwent a structured Suryanamaskar training program for the period six weeks. Cognitive Concentration ability was measured before zero week of Suryanamaskar Intervention and after the Suryanamaskar intervention of Six weeks using the Vienna Test System (VTS)-Cognitron Test Form S4. This Study revealed a notable Cognitive concentration ability improvement among the university students as it presents the mean score from 56.35 (SD=21.45) to 74.65 (SD=13.72). Therefore, the change in cognitive concentration ability was statistically significant ($z=-3.72$, $p<.001$), as it indicates enhanced Cognitive concentration ability among the university students following Suryanamaskar intervention for six weeks. The findings suggest that Suryanamaskar practice can significantly improve Cognitive concentration ability among university students. Suggesting its potential as an effective cognitive concentration enhancement in academic settings as it can incorporate with the Suryanamaskar intervention with larger sample size and population.

Keywords

Suryanamaskar, Cognitive Concentration, University Students, Vienna Test System

1. Introduction

Yoga is an ancient and traditional practice that aligns with Indian philosophy from time immemorial [1]. Yoga has evolved from a spiritual discipline to a globally recognised physical and mental practice for health and wellness [2]. Traditionally, yoga, associated with meditation, flexibility, and

holistic well-being, has also emerged as a competitive sport in recent years [3]. As a sport, Yoga is associated with physical power, mental discipline and agility [4]. In any field, there is a need for concentration to execute the determined objectives;

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therefore, Yoga plays a crucial role in approaching and assessing the directed goals in a rational direction with strategic accomplishment [3]. The great Rishi, Maha Rishi Patanjali, systematized the yoga with the principle of Yogic practice into Patanjali Yoga Sutra. The Yoga Sutra has also been divided into four Padas such as Samadhi Pada, Sadhana Pada, Vibhuti Pada and Kaivalya Pada [5].

The twelve dynamic postures, synchronized breathing, and mindful focus are all part of the ancient and traditional yogic practice known as Suryanamaskar [2]. Suryanamaskar inculcate numerous advantages which include enhancing flexibility, cardiovascular endurance and physical strength [6]. SN develop and enhance neuromuscular coordination, muscular strength, stress preventive and reduction, and cognitive abilities and alertness, are well acknowledge in both yoga and scientific literature [7]. Suryanamaskar's rhythmic and meditative structure aids in regulating the autonomic nervous system, which enhance physiological efficacy, cognitive and emotional regulation [8].

Concentration is fundamental cognitive skill that plays an important role in overall mental efficiency [9]. In today's contemporary fast paced academic environment, students often struggle with stress, distraction and reduced attention span, which negatively impact their learning outcomes [10]. Yoga as an ancient practice that integrates asanas, pranayama, dharna, dhayana, and shatkarma, has been widely emphasizes for its potential to improve concentration, cognitive function including health [11].

2. Methodology

For this scholarly inquiry, the study was conducted based on a quasi-experimental pre-test and post-test design to assess variations in concentration levels before and after Suryanamaskar intervention. A total of 20 University Students from Rajiv Gandhi University, Arunachal Pradesh, aged between 18 to 25 years, participated in the study. Participants were collected through convenience sampling. None of the subjects had prior experience with Suryanamaskar training. Participants underwent a structured six weeks Suryanamaskar training program, consisting of 45-60 minutes session at morning 6: 00 am to 7: 00 am, for 5 days a week.

2.1. Test Procedure

From commencing the measurement, the Vienna Test System (VTS) Cognitrone Test Form S4 was used to measure the Cognitive concentration ability of the university students, and twenty participants were hailing from the different courses run by the Rajiv Gandhi University were tested. The fixed duration for the VTS Cognitrone Test Form S4 is 1.8 sec. for each item, which was incorporated. Participants were instructed to

respond and react only when the comparison items or Figures corresponds to one of the four related and reference Figures [12]. Participants were also instructed that during the test, one cannot omit an item or go back to the preceding one because once the presentation duration expires, the next Figures or items follow instantly and automatically [13].

Individual testing with Cognitrone (cog) Test Form S4 (VTS) was conducted under standardized conditions with participants. Before the actual test, respondents experienced an instruction phase (with animated instruction) and a practice phase to familiarize with the process [13]. During the testing, the subject was shown a comparison Figures and four reference Figures on the computer screen. The subject had to select the reference Figure closest to the comparison Figure. Reactions were registered by the computer response panel or keyboard.

Figure 1: VTS Cognitrone Test Form S4 for Data Collection test.



Figure 1. VTS Cognitrone Test Form S4 for Data Collection.

Upon completion of the practice phase, participants conducted the full test independently, and response were automatically recorded for later data analysis. The main variable of the test form is the ability to concentrate. In test form S4, it measures the accuracy during concentrated work. This includes Test Form S4 in which the respondents have an equally long period available for comparing a comparison sample with the reference sample [14]. This period is 1.8 seconds [11]. The test duration for Test Form S4 including instruction is approx. 8 minutes [13].

2.2. Training Protocol

In the current measure, the training regimen of Suryanamaskar was implemented for a period of six weeks. Every training regimen started with following 10 minutes of loosening exercise and a warm-up period of gentle mobilization and breathe awareness practice, advancing to systematic practice of Suryanamaskar [15]. Participants trained five days per week and marched through a progressive training regimen to complete 13 rounds in the first two weeks, 19 rounds in weeks 3 to 4, and 25 rounds in weeks 5 to 6.

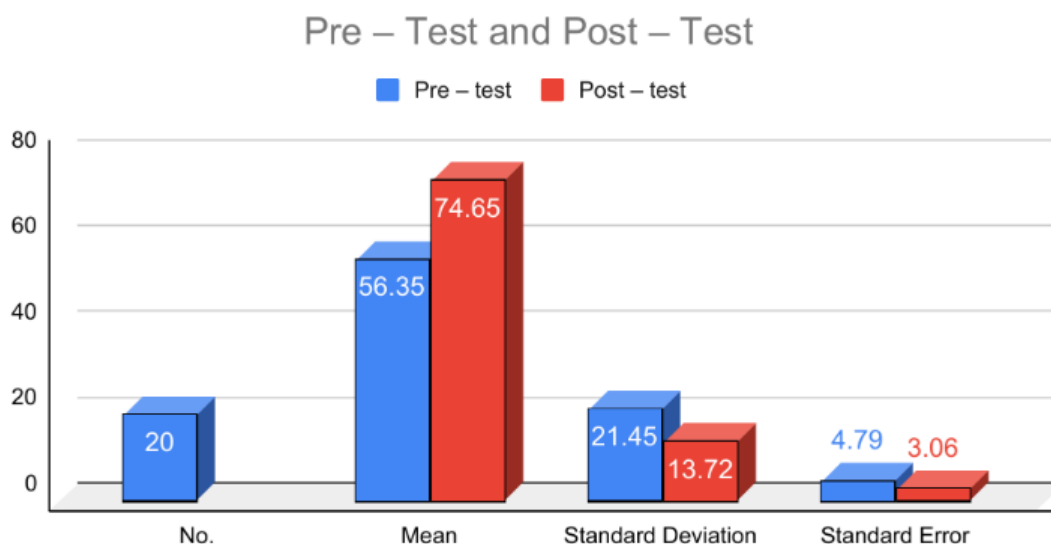
Table 1. Six weeks Training Program for Suryanamaskar Practice.

Week	Frequency	Rounds or Session	Targeted structure	Recover protocol	Observation & supervision	Duration or Session
1-2 week	Five session / week	13 rounds	2 set of 7 rounds	4-5 second pause between rounds 1 minute after every round	Instruction (first 4 session) and independent.	45 to 60 minutes (Include warm up, and relaxation followed by opening and closing prayer.
3-4 week	Five session / week	19 rounds	3 set of 9 rounds	4-5 second pause between rounds 1 minute after every round	Instruction (first 4 session) and independent.	45 to 60 minutes (Include warm up, and relaxation followed by opening and closing prayer.
5-6 week	Five session / week	25 rounds	4 set of 6 rounds	4-5 second pause between rounds 1 minute after every round	Instruction (first 4 session) and independent.	45 to 60 minutes (Include warm up, and relaxation followed by opening and closing prayer.

During the training session, participants practiced postures synchronized with breathing, maintained a stable gazed as strategy to build concentration ability, and practiced dynamically with a steady rhythm through transitions of different Suryanamaskar asnas. there were five second paused between each round and a one-minute recovery break after every six rounds to aid rest and focus. The first four training were supervised by the instructor and afterwards the participants continued practicing on their own as instructed. Every training period lasted for 60 minutes, including warm up and recovery. The Suryanamaskar Training Session Program for six weeks has been given at [Table 1](#).

2.3. Data Analysis

For the data analysis, SPSS, the Wilcoxon Signed Rank Test was used to understand the effect of Suryanamaskar intervention on the subject. The researcher draws attention to [Table 1](#). This may be the effect of the Suryanamaskar intervention for the period of six weeks. The test revealed statistically significant differences in Cognitive concentration of students ($z = -3.72, p < .001$). This indicates that Suryanamaskar had a positive impact on university students, especially in cognitive ability. Therefore, the mean score of Cognitive Concentration Ability of students ranged from 56.35 (SD=21.45) to 74.65 (SD=13.72).



Result of Six Weeks Suryanamaskar Intervention

Figure 2. Result of Six Weeks Suryanamaskar Intervention on Cognitive Concentration Ability of University Students.

3. Result

The results indicate that the main score of the Cognitive concentration before (pre-test) Suryanamaskar Training was 56.35 (SD=21.45), whereas after the training (post-test), it significantly increased to 74.64 (SD=13.72). Therefore, Wilcoxon Signed Rank Test revealed that the test has significant

improvement in Cognitive Concentration Ability among university Students i.e. ($z=-3.75$, $p<.001$). This indicates that the Suryanamaskar training had a positive impact on university students of Arunachal Pradesh, especially in Cognitive Concentration.

Table 2. Descriptive Result of Cognitive Concentration of Pre and Post-test Suryanamaskar intervention among University students.

Table 2. Descriptive Result of Pre and Post Test Suryanamaskar Intervention.

Variable	Training	No.	Mean	Std. Deviation	Std. Error
Concentration Ability	Pre – test	20	56.35	21.45	4.79
	Post – test		74.65	13.72	3.06

4. Discussion

The incorporated Practice of Suryanamaskar, likely contributed to the observed improvement in cognitive ability especially the cognitive concentration ability of the students. Practical implications: The positive effect of Suryanamaskar on concentration ability being observed, educational institutions may integrate the Suryanamaskar session into their curricula to support and encourage the student's mental well-being and academic performance to assess the effect of Suryanamaskar on Cognitive ability of university students, the statistical technique Wilcoxon Signed Rank test was utilized as predetermined significant level set at 0.05.

The assessed findings revealed that the statistically significant improvement in Cognitive concentration ($z=-3.72$, $p<.001$). This indicates the Suryanamaskar training found enhanced improvement on selected Cognitive Concentration Ability. Limitation and Future Research: 1. small sample size: A large sample size would improve the generalizability of findings. 2. Short Duration: The long-term effect of Suryanamaskar training need further exploration. 3. Control Group: Future study shall include control group for effective and systematic comparison.

5. Conclusion

The Research study finds that Suryanamaskar training significantly improves the concentration ability of university students in Arunachal Pradesh. The study highlights Suryanamaskar as a promising enhancement approach, reinforcing for academic and mental wellbeing, so there should be awareness among the people and institute about the benefits of Suryanamaskar practice in daily life. Educational institu-

tions may suggest Suryanamaskar along with academic curriculum. It is beneficial for all the ages to live better relaxed and quality life.

Future research direction: First. one can explore gender differences in the impact of Suryanamaskar on concentration. 2. One can investigate the long-term cognitive benefits of regular Suryanamaskar practice. 3. Explore the effectiveness of different Suryanamaskar Style on Cognitive Concentration.

Abbreviations

SN	Suryanamaskar
VTS	Vienna Test System
COG	Cognitrone

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Author Contributions

Umesh Mimi: Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Software, Writing – original draft, Writing – review & editing, Resource

Sambhu Prasad: Formal Analysis, Methodology, Project administration, Supervision, Visualization

Abhishek Balo: Conceptualization, Formal Analysis, Validation, Visualization, Resource

Tasha Appralo: Conceptualization, Formal Analysis, Investigation, Validation, Writing – review & editing, Resource

Conflicts of Interest

All the authors declare that they have no known competing financial interest of personal relation that could have appeared to influence the work reported in this research paper.

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