

Effects of Sukshma Vyayayam Yoga and Guided Meditation Together to Minimize Cognitive Interference

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ABSTRACT

One of the causes of decreased performance level and quality at workplaces, is cognitive interference, defined as intrusion of undesired thoughts interfering with task-related activities. In this study, we investigated whether combining guided meditation with Sukshma Vyayayam Yoga (SVY) practices could improve performance on cognitive interference tasks. 14 employees, 5 males and 9 females, with an average age of 42 years, were selected to evaluate this effect. They had been practicing 40 minutes SVY and guided meditation three times a week for 20 months under the supervision of Art of Living faculty. The participants completed the Stroop test prior to and following the 40-minute SVY and guided meditation session. Results suggest SVY and guided meditation to be effective in reducing cognitive interference in 79% of participants. The mean absolute time difference in naming matched and mismatched colors after SVY + meditation, was 5.64 ± 3.84 seconds, which was significantly less than 8.64 ± 5.00 seconds, the mean time difference before SVY + meditation ($p < 0.05$). It was concluded that engaging in 40 minutes of SVY and guided meditation three times a week for an extended period of time can significantly minimize cognitive interference in majority of participants.

KEYWORDS - Cognitive Interference, Guided Meditation, Stroop Test, Sukshma Vyayayam Yoga

1. INTRODUCTION

Cognitive interference refers to the intrusion of unwanted, undesirable and possibly distressing thoughts in an individual's mind while engaged in task-oriented activities. Since intrusive thoughts do not contribute meaningfully to solving the cognitive task at hand but instead disrupt an individual's focus while engaging in task-oriented activities, cognitive interference lowers performance quality and level. According to several studies, cognitive interference may be a factor in subpar performance, delayed learning and accident-prone behaviour [1-3].

Numerous studies in the last few decades have explored the impact of mindfulness meditation sessions on reducing distractor inhibition in cognitive interference tasks, including the Attention Network Test and the Stroop task [4-7]. Research involving both novice meditators and individuals with prior meditation experience has demonstrated that participating in a 30-minute group mindfulness meditation session can enhance performance on tasks that require managing cognitive interference [4,6]. However, a recent meta-analysis encompassing twenty-nine trials on group mindfulness meditation sessions indicates that participation in group mindfulness training did not produce a significant effect on executive function [8].

The primary objective of this study was to evaluate the effectiveness of integrating Sukshma Vyayayam Yoga (SVY) techniques with guided meditation sessions in enhancing performance on cognitive interference tasks. SVY, or subtle yoga, represents one of the quickest and most simple methods to achieve relaxation and enhance blood circulation to the brain [9,10]

2. METHOD

Participants in the study were employees of a Mumbai-based organization. They all practiced 20 minutes of SVY and 20 minutes of guided meditation three times a week for twenty months. The SVY and guided meditation sessions were facilitated by instructors from the Art of Living organization. Participation in the study was voluntary. All the employees who participated in this study signed an informed consent form prior to participating in the study. The Stroop Test was used to examine cognitive interference, and the methodology was comparable to that of McIntosh's research of cognitive interference on seventeen college students [11].

The staff members were paired up to start the study. Each pair received two sheets of paper, face down. The first sheet included twenty written words that weren't matched for their colour (for instance, the word "red" printed in blue ink) and twenty colour boxes without any text. The second sheet was the answer sheet to the first one. Following the distribution of papers, participants were instructed to flip the sheets over and toss a coin. At the beginning of the task, each pair had the chance to assign one participant to be the timing participant and the other to be the testing participant; these roles were to be switched on completion of the task. The winner of the toss would begin with the matched set of colours followed by the mismatched set. The other participant in the pair, proceeded in the opposite sequence, that is, with the mismatched colours set first, followed by the matched colours.

Each test-taker had to correctly identify all twenty colours from both the lists while one partner kept track of the time using a timer. Timers were told to continue uninterrupted in situations when testers paused or hesitated. The time taken to correctly identify the matched and mismatched colors were noted in seconds. The participants participated in a 20-minute SVY practice and 20-minute guided meditation session, facilitated by the Art of Living faculty, after the tests. As soon as the meditation session ended, the participants went back into their pair and used the matched and mismatched list of colours to perform the test again in the same order as previously and recorded the time taken in seconds.

3. RESULTS

This study included five males and nine females with an average age of 42 years. The response of the participants was determined and the results are as shown in Table 1 and 2. As shown in Table 1, the mean time to accurately identify matched colours was 14.14 ± 2.66 seconds and was significantly less ($p < 0.05$) than 22.78 ± 5.96 seconds, the average time taken to identify the mismatched colours. Similarly, after the combined SVY and meditation session, the time to identify the matched colours was 13.21 ± 3.05 seconds and was significantly less ($p < 0.05$) than 18.85 ± 4.42 seconds, the average time taken to identify the mismatched colours.

Effect of 40-minute practice of SVY and guided meditation on cognitive interference was determined by comparing the difference in the reported time for color naming between matched and mismatched colors, premeditation with the values post meditation, using paired t test. All values were considered significant when $P < 0.05$. As seen in Table 2, the mean absolute time difference in color naming between matched and mismatched colors post SVY + meditation was 5.64 ± 3.84 , which was significantly less than 8.64 ± 5.00 , the mean time difference, pre SVY + meditation ($p < 0.05$).

Table 1: Measures of Matched and Mismatched Colors

Intervention	Mean Time to Identify Matched Colors in Seconds	Mean Time to Identify Mismatched Colors in Seconds	p
Pre SVY + Meditation	14.14 ± 2.66	$22.78 \pm 5.96^*$	0.000015
Post SVY + Meditation	13.21 ± 3.05	$18.85 \pm 4.42^*$	0.0000734

Values are expressed as the Mean \pm Std. Deviation
 Number of observations = 14
 *: significantly different from time to identify matched colors ($p < 0.05$)

Table 2: Effect of SVY+ Meditation on Time Difference in Measures of Matched and Mismatched Colors

Intervention	Mean Absolute Time Difference in Measures of Matched and Mismatched Colors in Seconds	p
Pre SVY + Meditation	8.64 ± 5.00	
Post SVY + Meditation	$5.64 \pm 3.84^*$	0.049

Values are expressed as the Mean \pm Std. Deviation
 Number of observations = 14
 *: significantly different from Pre SVY + Meditation values ($p < 0.05$)

4. DISCUSSION

In today's workplace, when increasing efficiency is a primary concern, employee capabilities are under pressure. Performance isn't always dependent on intellectual capacity. Changes in the content of human thoughts happen quickly and are common in day-to-day living. The employee may be dissatisfied, demotivated or distracted [1]. The continual exposure to digital media and associated mobile gadgets in our modern-day environment exacerbates this situation by overloading one's senses. More than ever, our nervous systems are under cognitive pressure to focus on thoughts that are pertinent to our immediate objectives and to suppress thoughts that are irrelevant to the work at hand [12,13]. Cognitive interference, or thoughts that interfere with task-related activities can be caused by any of above situations and serve to reduce the quality and level of performance [1,2].

According to the current study, practicing SVY and guided meditation for 40 minutes can reduce this cognitive interference. This impact was noted in eleven of the fourteen participants. These were the individuals who consistently attended the practice sessions.

5. CONCLUSION

Despite being a small pilot study, the findings merit further research with a larger sample size. Employees of all ages and organizational levels should have their benefits from the intervention investigated. Seniors and middle-aged employees would gain more because they are reported to experience more bothersome and unwanted thoughts [13]. Employees in office and shop floor will benefit from the Sukshma Vyayam Yoga + guided meditation in terms of their capacity to generate high-quality work, boost productivity and lower accident rates.

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