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Effect of Cyclic Meditation on selected Psychological Variables among Corporate Employees

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ABSTRACT

Background: Today's competitive work environment has created enormous amount of stress on corporate employees, the impact of this as seen on impaired cognitive Functions and compromised mental health, there is a connection between cognition impairment with occupational stress. Mind-body techniques such as cyclic meditation (CM) have shown to improve cognitive functions, reduce stress and enhancing psychological wellbeing. The objective of this study was to determine whether cyclic meditation enhances the cognitive functions. **Material and Methods:** Thirty-five participants who had enrolled in a fifteen days cyclic meditation program. Their ages ranged between 20 and 60 years (group average ±S.D. 38.4±9.3 years, both genders). Those who have any chronic illness and mental illness, and those who are not willing to participate were excluded. Cyclic meditation is given for 15 days, 40 min./day. At baseline and following fifteen days, all participants completed DLST and SLCT. **Results:** cyclic meditation program showed significant change in DLST scores, increase (P-value< 0.001) in total attempted score, significant increase (P-value<0.001) in net score. Significant change in SLCT scores, significant increase (P-value<0.001) in total attempted score, similarly, significant increase (P-value<0.001) in net score, but there was no reduction in wrong attempt scores on both the tests (P-value >0.05). **Conclusions:** The fifteen days of cyclic meditation practice was successful in enhancing the cognitive function among corporate employees.

Key words: *Cognitive functions, cyclic meditation (CM), corporate employees, SLCT, DLST.*

INTRODUCTION

One of the biggest challenges in today's competitive modern world is mental health, workplace stressors are arguably, the most predominant stress factors. These include high job demands, inflexible working hours, poor job control, poor work design and structure, bullying, harassments, and job insecurity. Occupational stress has an effect on a person's well-being, including cognitive, psychological, physiological, and behavioural aspects. It has been documented that occupational stress gives rise to the cognitive impairment among the employees.[1] Stressful conditions, has a cognitive cost. Indeed, working memory, attention, response inhibition and cognitive flexibility have all been found to be impaired by stress.[2] Chronic stress causes damage to the cerebral structures such as hippocampus which can be accompanied by difficulties in cognitive functions.[3] At work, impairments in these domains translate to a reduced ability to concentrate, control our impulses, remember and plan. Thus, stress hindered their performance. Thus, there is sufficient evidence to consider occupational stress as a factor that is able to contribute to cognitive impairment. Since occupational stress could lead to cognitive

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impairment, its impact on a more susceptible population, such as corporate employees, could be more pronounced, It has been documented that improved performance in the task which required selective attention, concentration, visual scanning abilities, and a repetitive motor response following CM. Mechanism of CM practice is associated with reduced sympathetic activity, increases the performance in an attention task. The above finding would be via increased proprioceptive input to the reticular activating system.[4] The aim of this study was to investigate, efficacy of CM on cognitive functions among corporate employees.

Material and Methods

In this interventional study, with a pre-post design, thirty-five healthy corporate employees, between the age group of 20-60 years (25 males and 10 females), were selected using a convenient sampling method for a 2-week CM based yoga intervention. We had fully explained the potential risks and benefits in the study before written informed consent was obtained from the participants; the study was approved by the ethics committee of the institution, Lakulish Yoga University (Ahmedabad, Gujarat, India). Those having neurological and psychiatric disorders (based on case history) and those who were non-working, government employees, part-time employees or unemployed individuals were excluded from the study. The design was a single group, pre-post trial. Participants were assessed on 1st and 15th of the 2-week CM program.

Intervention

Cyclic meditation: Based on this a technique of 'moving meditation', a practice of yoga postures with guided meditation was evolved, called Cyclic meditation (CM), by H.R. Nagendra, PhD, which has its origin in an ancient Indian text, *Mandukya Upanishad.*[5] It is interesting to note that CM induces a quite state of mind, which is compatible with the description of meditation, namely, *Dhyana* or effortless expansion, according to Patanjali. The description states "*Tatra Pratyayaikatanata Dhyanam" (Patanjali's Yoga Sutra* s, Chapter 3: Verse 2). This means that an uninterrupted flow of the mind toward the object chosen for meditation is *Dhyana.*[5] Indeed, all meditations irrespective of the strategies involved are believed to reach this state. There are several strategies in meditation which include breath awareness, awareness of internal sensations, directing the attention to *a mantra*, and keeping the eyes open with the gaze fixed on the object of meditation.[5] The verse on which CM is based states: "in a state of mental inactivity awaken the mind; when agitated, calm it down; between these two states realize the possible abilities of the mind. If the mind has reached states of perfect equilibrium do not disturb it again." The underlying idea is that, for most persons, the mental state is routinely between the extremes of being "inactive" or of being "agitated" and hence to reach a balanced and relaxed state; the most suitable technique would be one which combines "awakening" and "calming" practices like that of CM. (*Mandukya Upanishad* 3-44). In day-to-day life we relax deeply, though unconsciously, by stretching and relaxing through yawning. In Cyclic Meditation, we stretch consciously and systemically, and then relax using standing postures like *Padahasthaasana, Ardhakati chakrasana*, and sitting Asanas like *Shashanka asana* and *Ushtrasana*. This provides stimulation at muscular level. The process begins with *Tadasana* that helps us to centre our body. All the postures are performed with a slow speed maintain awareness. Apart from muscular stimulation in CM, we use sound (chanting *Akara, Ukara, Mkara* and *Omkara*) and visual (attuning to vast ocean) stimulation as well to go to deeper silence. Meditation has been shown to reduce stress and increase performance in cognitive functions

Assessments

SLCT - Cancellation tests require visual selectivity and a repetitive motor response. A six-letter cancellation test was administered to assess functions such as selective and focused attention, visual scanning, and the activation and inhibition of rapid responses. The six letter cancellation test has been used in similar type of design on Indian population.[6] The six letter cancellation task worksheet consists of an array of

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random alphabets, A-Z, in 14 rows and 22 columns. Participants were asked to sit with the worksheet distributed to each one. The instructions are given asking them to cancel as many target digits as possible in the specified time. They are asked to cancel as their wish whether horizontally, vertically, or selecting a particular letter one at a time randomly in the row. Finally, after knowing the test instructions they are asked to start the test, each test was conducted for 90 seconds on a standard stopwatch.

DLST - Digit letter substitution test contains flexibility at mind level, visual scanning, attention and psychomotor speed of processing information. It is used with same type of design on Indian population.[6] DLST worksheet consists a row of random digits, 1-9, in 8 rows and 12 columns. The coding sheet contains instructions about the test with example of substituting a specific letter for specific digit 1-9, the same code is applicable to entire test. Subjects were instructed to make their choice of letter substitution process, whether horizontally, vertically, or selecting a particular digit randomly in the row one at a time. In given time of 90 seconds substitute as many target digits as possible.

Data Analysis

The data taken on the last day and on the first day of the cyclic meditation program were compared with t-test and wilcoxon signed rank test for paired using SPSS version 16.0.

Results

A total of 35 subjects were participated in the study 35 subjects completed the study, which was conducted at the end of fifteen days training program; Mean values and standard deviation for total scores, wrong substitutions, and net scores of six-letter cancellation task and digit-letter substitution task.

SLCT: Six Letter Cancellation Test

After 15 days of cyclic meditation program it showed that 25.07% significant increase (P< 0.001, paired samples t-test) in total attempted score on SLCT. Similarly, there was 24.94% significant increase (P = 0.001, paired samples t-test) in net scores. However, there was 37.5% increase in wrongly attempted score which was not significant (P = 0.6, Wilcoxon Signed Ranks Test) [Table 1 & Graph- 1].

DLST: Digit letter substitution test

After 15 days of cyclic meditation program it showed that 14.69% significant increase (P< 0.001, paired samples t-test) in total attempted score on DLST. Similarly, there was 15.48% significant increase (P = 0.000, paired samples t-test) in Net scores. However, there was 66% increase in wrongly attempted score which was not significant (P= 0.4, Wilcoxon Signed Ranks Test) [Table 2 & Graph - 2].

Discussion

The purpose of this study was to investigate the efficacy of fifteen days of Cyclic meditation intervention on selected psychological variables particularly executive functions in a corporate employee population. Completion of this program was associated with overall significant improvement in measures of executive functions. Substitution tests are essentially speed dependent tasks that require the subject to match particular signs – symbols, digits, or letters - to other signs within a specified time period. Substitution tasks involve visual scanning, mental flexibility, sustained attention, psychomotor speed, and speed of information processing.[7,8] Cyclic meditation training has emerged as a preventive modality for cognitive decline by enhancing the executive functions, to support the findings our study, in a two-day CM program decreased occupational stress levels and baseline autonomic arousal in 26 asymptomatic, male, middle managers,[9] suggesting significant reduction in sympathetic activity. The mechanisms underlying the decrease in occupational stress levels may be related to decrease autonomic arousal (sympathetic activation) as well as psychological factors, though this remains a speculation. In an another study, the effect of CM practice on performance in a letter cancellation task, was assessed in 69 male volunteers (whose ages ranged from 18 to 48 years).[10] There was improved performance in the task which required selective attention, concentration, visual scanning abilities, and

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a repetitive motor response following CM. so from the above evidences and findings of our study we could speculate that CM is potential candidate for both occupational stress management and cognitive impairment prevention as well. Present study suggests that CM could help to prevent the cognitive impairment and enhance employee productivity by enhancing their psychological welling. Limitation of the present study was that it did not have a control group.

Conclusion

The fifteen days Cyclic meditation practice was successful in improving selective psychological variables, particularly sustain attention, working memory capacity among corporate employees, a longer follow-up period will enable researchers to thoroughly examine neuro-cognitive changes. Although this was limited by small sample size, lack of heterogeneous population, these findings suggest rigorous systematic approaches and advanced imaging techniques to examine Cyclic meditation as a potential tool to enhance executive function and prevent early cognitive impairment among corporate employees.

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Table 1: SLCT changes after Cyclic meditation program

SLCT score	Cyclic meditation Before	Cyclic meditation After	% Change	p
Total Attempt	34.97 ± 12.15	43.74 ±10.41	25.07	0.001**
Wrong Attempt	0.08 ±0.1	0.11 ±1.0	37.5	NS
Net score	34.91 ±12.18	43.62 ±10.46	24.94	0.001**

*significant at P<0.05, **significant at P<0.01, ***significant at P<0.00 (paired sample test and Wilcoxon Signed Ranks Test) SLCT: Six Letter Cancellation Test, NS: Not significant.

Graph 1: SLCT Test changes after CM

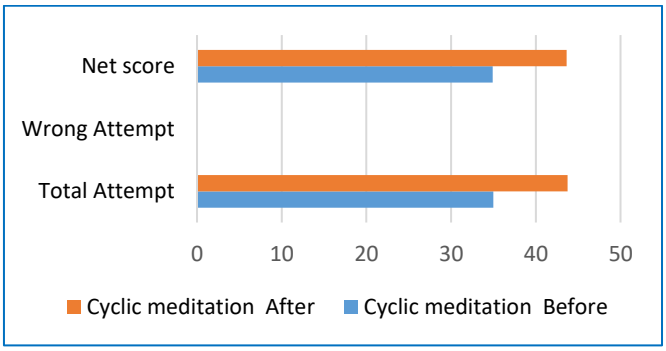
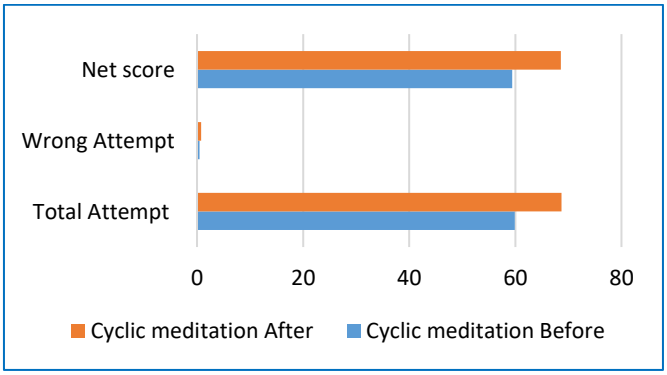


Table 2: DLST Changes after Cyclic meditation program

DLST score	Cyclic meditation Before	Cyclic meditation After	% Change	p
Total Attempt	59.88 ± 13.8	68.68 ±11.5	14.69	0.001**
Wrong Attempt	0.48 ±1.0	0.8 ±1.0	66	NS
Net score	59.4 ±15.3	68.60 ±11.4	15.48	0.001**

*significant at P<0.05, ** significant at P<0.01, ***significant at P<0.00 (paired sample test and Wilcoxon Signed Ranks Test) SLCT: Six Letter Cancellation Test, NS: Not significant.

Graph 2: DLST Test changes after CM



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