

EFFECT OF ASANA AND OM CHANTING ON MEMORY IN SCHOOL GOING CHILDREN

Mamta Rani and Guru Deo

PhD, S-VYASA Yoga University, Division of Yoga & Physical Science.



ABSTRACT:

BACKGROUND:

It is obvious that the people who are working in industries often face different challenges and obstacles. It is very tough to handle the stress sometimes in such condition during the work load time. Therefore, to come out of the worst situation, different ways are available. Some of possible ways are guided meditation, chanting of mantra, mindfulness meditation, yoga practices, prayer, and deep breathing exercise. Om Mantra itself is not only human invention, going along with particular

cultures or groups. Rather, the OM Mantra is a symbol of deep reality that already exists. The levels of overall (A), subtle (U), and causal (M), and the states of waking (A), dreaming (U), and deep sleep (M) are definitely there, regardless of the symbolism captured in the mantra when stated as AUM Mantra. These realities at the different dimensions are most useful in our spiritual practices. If the OM Mantra is chant everyday it brings out all the positive energy within us. Om Mantra turns around negative vibrations into positive vibrations

MATERIALS & METHODS:

Total 60 children were selected from Govt. Primary School, Sahu Hisar (Haryana) between the age group of 10 to 11 years who were ready for one month OM chanting and yoga practice. The assessment was done before starting the intervention and on the last day as post assessment. Subjects were briefed about the study before carrying out actual intervention. Signed informed consent was taken from the principal of the school. The inclusion criteria were; children were included in the study whose parents voluntarily allowed them to participate; students who could know English and Hindi language; students who could be regular for one month practice. Children were excluded who having any acute psychological disorders; having any hearing problems; having any pathologically condition to practice asana. Single pre-post design was incorporated in the study to see the effect of Om Chanting and certain selected asanas on school going healthy children.

RESULT:

The data clearly indicated that after one month of asanas and Om chanting result showed improvement in

memory, learning ability and short term memory in school going children. The current study was designed to assess the short-term memory and its different components using Six Letter Cancellation Test (SLCT) and Digit Symbol Substitution Test (DSST). The result of the study showed highly significant changes in the post assessment of SLCT. The score was increased highly significantly ($p < 0.0001$) and the same score was also observed in DSST ($p < 0.0001$). The result shown improvement in memory, learning ability and short term memory in school going children when pre-data was compared with post assessment.

CONCLUSION:

The results of the study suggest that combined practice of om chanting and selected asanas practice are useful tool to improve memory, learning ability, and short term memory in school children. Current research also concluded that to generalize the finding for broader application, objective assessment for future study.

KEYWORDS:

Om chanting, asana, memory, learning ability, short term memory.

INTRODUCTION

It is often seen that our attentiveness and concentration are stolen from us by the things taking place around us in the world in modern times. Different challenges and obstacles are faced by the people working in the industries. It is tough to handle the stress sometimes. Therefore, to come out of the worst situation, in different ways, different means are available. Some of possible ways are guided meditation, chanting of mantra, mindfulness meditation, yoga practices, prayer, and deep breathing exercise. Nowadays health awareness is attracting people to earn better health in body and satisfaction in mind. Yoga is a natural way to achieve good health and happiness. Chanting is one of the most powerful parts of yoga. In the context of Yoga, 'OM' is considered to be a spiritual mantra, outstanding to fetch peace and calm. The entire psychological pressure and worldly thoughts can be taken away by the chanting of OM mantra (Harne, 2014).

Rather, the OM Mantra is a symbol of deep reality that already exists. The levels of overall representation by (A), subtle (U), and causal (M), and the states of waking (A), dreaming (U), and deep sleep (M) are also taken into consideration. These interpretations are not related to any particular sect. They are regardless of the symbolism captured in the mantra when stated as AUM Mantra. These realities at the different dimensions are most useful in our spiritual practices. If the OM Mantra is chanted everyday it brings out all the positive energy within us. Om Mantra turn around negative vibrations into positive vibrations (Ajay & Siddharth, 2008).

EFFECT OF OM CHANTING ON MEMORY

Memory is the basic requirement to learn and remember the things and information in school children, it is known as basic component of cognitive abilities. It is the need of present scenario in academic areas where children's attention, memory and cognition can be enhanced during school going stage by intervening OM chanting at the regular basis.

When we chant OM Mantra it does purification of our mind. From the purification of the mind arises clarity of vision. Other ways of purifying the mind, according to the text of Vedanta are moral observances, unselfish activities, keeping holy company, charity, ceremonial worship, right performance of duties etc. About Om Mantra, the most popular explanation often given is that it's a cosmic sound that has a harmonizing effect on the system. Om chanting is a yogic practice. Regular chanting of Om not only provides cognitive improvement but also develops our body cells and organs. First, we chant 'A' Kara in the sequence

which creates the vibrations effecting on the spinal cord. Second, we chant 'U' Kara with the vibrations in the throat and last chanted 'M' Kara with the vibrations on the brain. That's why the effect of Om chanting increases the power of memory. It helps in purification of the mind, controlling the emotions and relaxes physically, mentally and emotionally. It significantly effects on the concentration, memory and level of fatigue. Systematic method of OM chanting should be in a most comfortable posture like as sukhasana, padmasana etc. OM should be chanted during exhalation after deep inhalation (Linkenheimer, n.d.). Previous studies are done to see the different aspects of Om chanting with different intervention. Previous studies lack the intervention of Om chanting and selected asanas practice. The current study is designed to see the effect of both – Om Chanting and selected asanas in school going healthy children.

EFFECT OF ASANA ON MEMORY

Asana is one of the components of Yoga, adopted to make physical body conducive for higher practice. Without physical activity, we can't reach the state of mental and emotional. If we are physically not healthy we can't do practice of OM Chanting or any other meditation. Regular practice of asana reduces the illness; improve the body strength and concentration of mind and emotions. Brain is only the medium through which we educate our mind. Asana practice helps to calm down the mind. It also enhances concentration skills by increasing the circulation of blood to the brain. Thus, asana is very good practice to improve learning ability and short term memory especially for school children (Banerjee, 2014).

Memory is one of the basic cognitive ability or function of our brain. It is the faculty of the mind by which information is encoded and processed for application whenever needed for retrieval. To use information as per need is the most important aspect in academic arena in modern time. The aim of this study is directed to establish 'Om' chanting and selected asana as one of the effective module to enhance memory and learning ability. Hence, the study was planned with an aim to evaluate effect of Om chanting and selected asana on memory in health school children.

METHODS AND MATERIALS

Participants 60 school children (boys and girls) in the range of 10 to 11 years (Balram & Seema, 2012). Govt. Primary School, Sahu Hisar (Haryana). The Inclusion criteria were; children are included in this study whose parents were read; students who could understand English and Hindi language; students who were able to attend and practice regular one month all given yogic practice. The Exclusion criteria were set as children who were having any acute psychological disorders; students were having any hearing problems; students were having any pathologically condition to practice asana .

The study details regarding research protocol and ethics were presented and explained to members of the School management. The need for the study and study details were explained to the subjects and their parents and a signed informed consent was obtained from the parents of the selected students, before the study. Single pre-post design was used to conduct the research. Assessment was done first day before starting intervention and post assessment on the last day. All the participants were informed first day about the practice in detail. The participants were given asanas practices and OM chanting about 60 min/day for one month. During chanting, the eyes were closed. All the due care was taken to avoid unknown confounding factor during practice.

INTERVENTION

The intervention includes selected asanas and om chanting. The asanas are: Swastikasana, Gomukhasana, Koormasana, Dhanurasana, Parvatasana, Bhujangasana, and Paschimottanasana for the duration of 30 minutes. Om chanting for the duration of 20 minutes and at the last of session relaxation technique was given for the 7-8 minutes in supine position called Shavasana.

ASSESSMENT TOOLS

DIGIT SYMBOL SUBSTITUTION TEST (DSST)

The DSST is a pencil and paper test of psychomotor performance. In this test numbers and matching symbols is given and a test section with numbers and empty boxes. The test consists of filling as many empty boxes as possible with different symbols matching each number. Period of time is 90 seconds, and the score is the number of correct number-symbol matches. The strategy to solve the DSST consists of sequential encoding and retrieval of numbers and matching symbols(Manuscript & Gait, 2009).

DSST mostly was used for cognitive components and attention. DSST is a neuropsychological test. It is also used for measure of short term memory, learning ability and concentration. Participants were asked to match the correct pairs as much as possible in 90 seconds with any possible strategy. The total number of matched pairs in the test (DSST_T), wrong targets (DSST_W) and net scores (DSST_N) (total attempted, wrongly attempted) was calculated for the analysis (Satya Prakash, 2016).

SIX LETTER CANCELLATION TEST (SLCT)

SLCT is six letter cancellation test. The six letter cancellation task worksheet consists of array of random alphabets, A-Z, in rows and columns. A six letter cancellation test was administered to assess function such as focused attention, measure memory, visual scanning, and activation and inhibition of rapid responses. It has been used in similar type of design on Indian population also.

All participants were asking about how cancelled the letter. The instructions were given asking them to cancel as many target digits as possible in the specified time of 90 seconds. Given the choice them to cancellation strategy to do it vertically, horizontally, or selecting a particular letter one at a time randomly in the array. Finally, after ensuring that they have understood the test by answering all their queries they are instructed to turn over the worksheet and start the test as the bell rings. Each test was timed for 90 seconds on a standard stopwatch (Balaram P, 2011).

DATA EXTRATION & ANALYSIS

Data was extracted based on the manual and scoring key.

Data was analyzed by using SPSS statistical software for analysis. Data was found normally distributed ($p > 0.05$) for SLCT and DSST tested with Shapiro-wilk(Placeholder2) test. So, parametric test was used for within group analysis. A Paired Sample T-test was applied to test hypothesis for DSST and SLCT scores.

RESULTS

The data clearly indicated that after one month of asanas and om chanting improved the memory, learning ability and short term memory in school going children. The current study was designed to assess the short-term memory and its different components using Six Letter Cancellation Test (SLCT) and Digit Symbol Substitution Test (DSST). The result of the study showed highly significant changes in the post assessment of SLCT. The score was increased highly significantly ($p < 0.0001$) and the same score was also observed in DSST ($p < 0.0001$).

There was highly improvement on short term memory after one month practice of om chanting and asanas in school going children. The study was carried out to observe the changes in 3 specific areas of functioning of the brain. These three areas were memory, learning ability and short term memory. There were significant changes in the major domain of DSST where it consists of processing speed, attention, working memory and learning. In this study, the entire domain showed high scores which exhibit the improvement in the performance of school going children specifically in working memory. Table -1 shows the three aspects of assessments viz memory, learning ability and short term memory. The number of

respondent is shown in Table 2 and 3 for SLCT and DSST respectively.

EFFECT OF YOGA ASANA AND OM CHANTING ON MEMORY

There was recognition of 6 alphabets in SLCT and matching of alphabets in DSST. The total number of letter cancellation was attempted and counted in SLCT and total number of letters or signs were attempted and counted in DSST. Result was found highly significant in both SLCT and DSST. In SLCT the post score increased from (mean 15.80±8.13) to (mean 32.83±12.17) which shows highly significant change after one month om chanting and selected asana practice (p<0.0001). Likewise, in DSST, i.e. matching the alphabets represented by shapes, the pre-test mean score was (mean 14.12±6.13) which improved to (mean 43.57±14.15) after the om chanting and selected asana practice for one month (p<0.0001).

Table 1: Effect of Om chanting asanas and yoga asanas on memory of the children

Sr. No.	Variables	Pre (Mean±SD)	Post (Mean±SD)	t-value	P-value
1	SLCT (M)	15.80±8.13	32.83±12.17	8.92	0.0001***
2	DSST (M)	14.12±6.13	43.57±14.15	14.78	0.0001***
3	SLCT (L A)	15.60±8.10	32.48±12.21	8.92	0.0001***
4	DSST (L A)	14.12±6.13	43.57±14.15	14.78	0.0001***
5	SLCT (STM)	14.12±6.13	43.57±14.15	14.78	0.0001***
6	DSST (STM)	-	-	-	-

Note: ***p< 0.0001 significant at 1% level. SLCT=Six Letter Cancellation Test, DSST=Digit Symbol Substitution Test, M= Memory, LA= Learning Ability, STM= Short Term Memory

EFFECT OF OM CHANTING AND YOGA ASANAS ON LEARNING ABILITY

Learning ability of the children is shown in table 1 which is significantly improved by the yoga asanas and Om chanting. In learning ability assessment is done based on the total no. of correct attempt and counted for memory. The pre-test score of SLCT was (mean 15.60±8.10) which improved to (mean 32.48±12.21) after the post assessment. The learning ability in DSST which includes recognizing the alphabets with the given shapes was also highly significant. The learning ability score in DSST was (mean 14.12±6.13) during the pre-test and improved significantly to (mean 43.57±14.15) in post assessment after one month of practice ‘Om’ chanting and after the asanas.

EFFECT OF OM CHANTING AND YOGA ASANAS ON SHORT TERM MEMORY

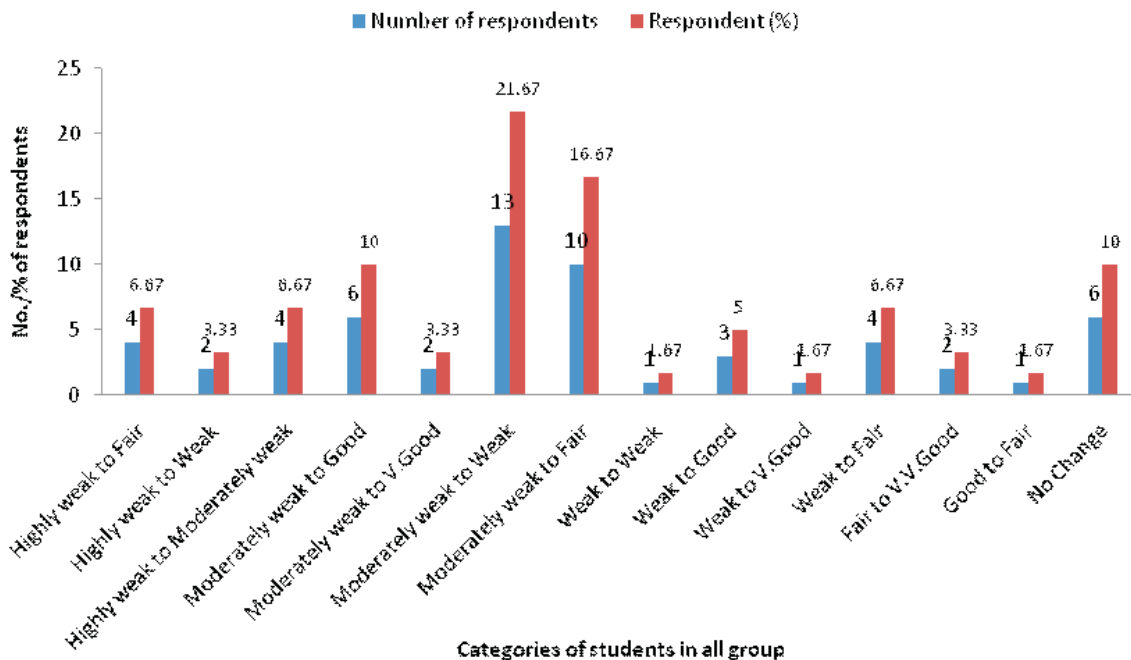
The effect of Om chanting and asana practice on short term memory after 30 days is shown in Table-1 as assessed by SLCT and DSST. On short term memory total no. of incorrectly counted score was taken into consideration and presented in table. In short term memory the data clearly revealed that the Om chanting and asanas for one month improved the short-term memory in the SLCT and DSST. SLCT scores improved significantly from (mean 14.12±6.13) to (Mean 43.57±14.15) in post-test. The DSST score was not observed due to the fact that all the respondents under study completed the digital symbol substitution test with all

right answers.

GRAPH -1 SHOWING THE NUMBER OF RESPONDENTS UNDER DIFFERENT GROUPS FOR OM CHANTING AND ASANAS IN SLCT

Respondents were further analyzed for their performance in terms of ability to attempt the assignment in SLCT and it was found that the respondents were falling under six groups i.e. A, B, C, D, E and F. Group A is represented by ‘highly weak’, group B by ‘moderately weak’, group C by ‘weak’, group D by ‘fair’, group, E by ‘good’ and group F by ‘no change’. Highest number of respondents who were affected by the post test of SLCT fall under group B i.e. under moderately weak, where the respondents improved their attempt ability from ‘moderately weak to good’(10%),‘moderately weak to very good’(3.33%),‘moderately weak to weak’(21.67%), and ‘moderately weak to fair’(16.67%). This group constituted by about (51.67%) of the respondents under the present study.

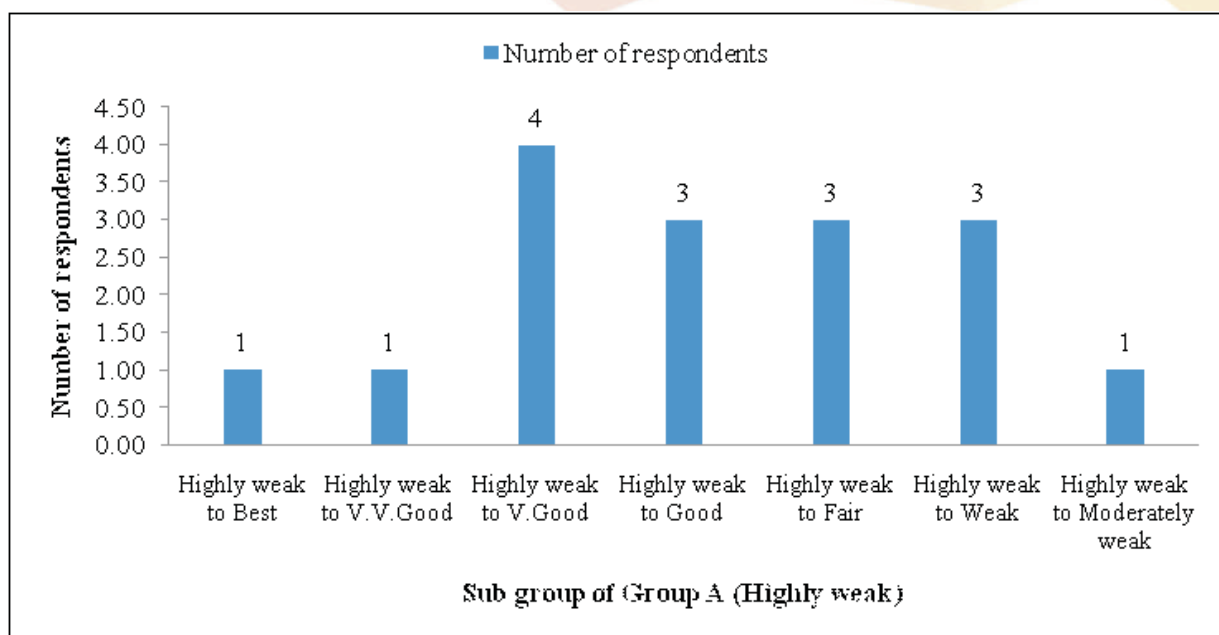
Graph – 1 showing the number of respondent under different groups in SLCT



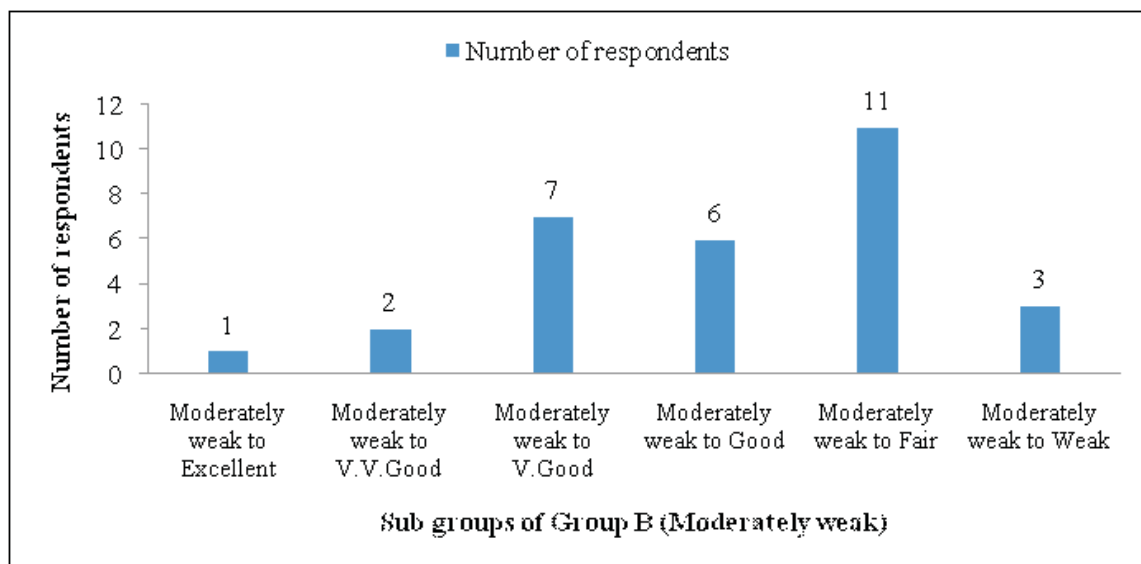
GRAPH 2 TO 5: NUMBER OF RESPONDENTS UNDER DIFFERENT GROUPS AFTER OMCHANTING AND ASANAS IN DSST

In DSST also respondents were further analyzed for their performance in terms of ability to attempt the assignment and it was found that the respondents were falling under four groups i.e. A, B, C and D. Group A is represented by ‘highly weak’, group B by ‘moderately weak’, group C by ‘weak’ and group D by ‘no change’. Highest number of respondents who showed improvement more in the post assessment of DSST fall under group B i.e. under moderately weak (50%), where the respondents improved their attempt ability from ‘moderately weak to excellent’ (1.67%), ‘moderately weak to very verygood’ (3.33%), ‘moderately weak to very good’ (11.67%), ‘moderately weak to good’ (10.00%), ‘moderately weak to fair’ (18.33%) and finally ‘moderately weak to weak’ (5.00%). This group constituted by about 50% of the respondents under the present study.

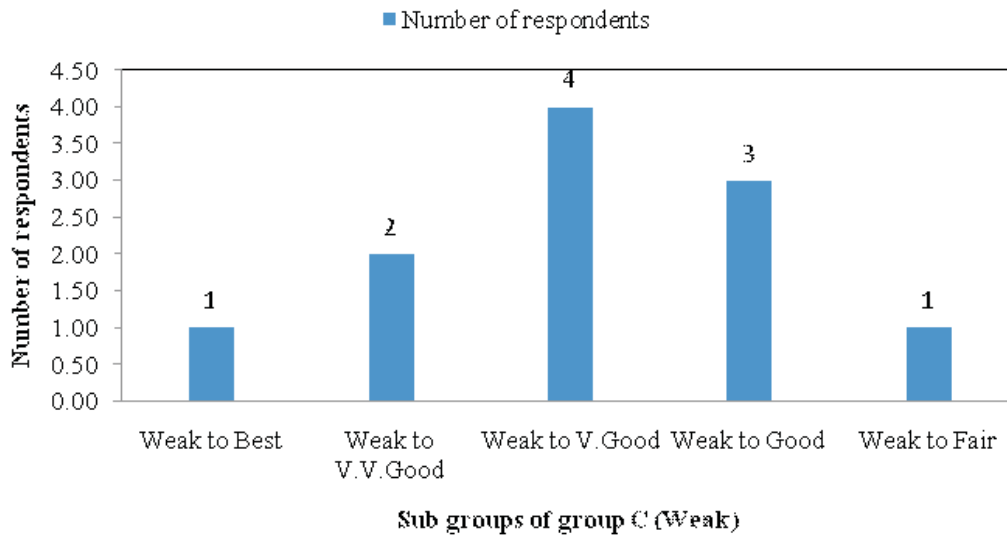
GRAPH-2 NUMBER OF RESPONDENTS OF GROUP A (HIGHLY WEAK) WHO'S ATTEMPT ABILITY IMPROVED AFTER OM CHANTING AND ASANAS IN DSST



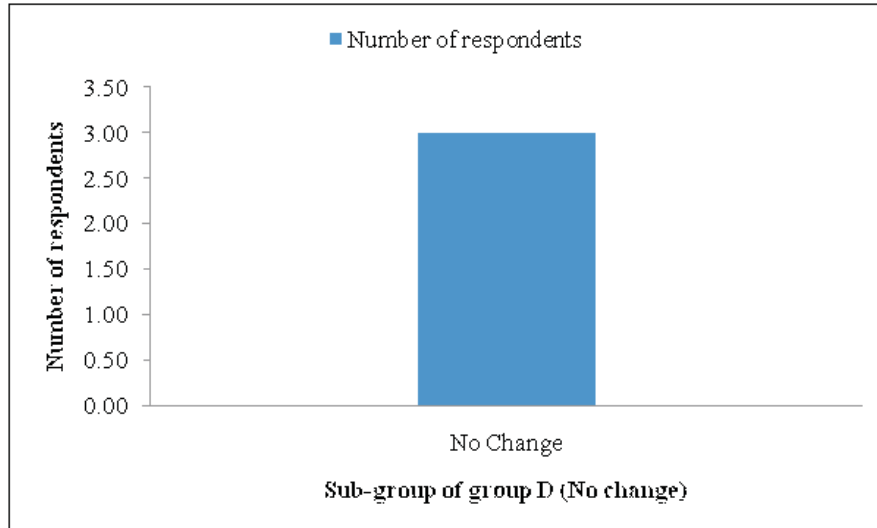
GRAPH-3 NUMBER OF RESPONDENTS OF GROUP B (MODERATELY WEAK) WHO'S ATTEMPT ABILITY IMPROVED AFTER OM CHANTING AND ASANAS IN DSST



GRAPH- 4 NUMBER OF RESPONDENTS OF GROUP C (WEAK) WHO'S ATTEMPT ABILITY IMPROVED AFTER OM CHANTING AND ASANAS IN DSST



GRAPH-5 NUMBER OF RESPONDENTS OF GROUP D (NO CHANGE) WHO'S ATTEMPT ABILITY IMPROVED AFTER OM CHANTING AND ASANAS IN DSST



DISCUSSION

This study was carried out to see the effect of asanas and om chanting on memory, learning ability and short term memory in school going children. Results showed that the pre-test score was (mean 15.80 ± 8.13) which improved to (mean 32.83 ± 12.17) after the om chanting followed by asanas in (SLCT). In digit symbol substitution test (DSST) i.e. matching the alphabets represented by shapes, the pre-test mean score of the healthy students as (mean 14.12 ± 6.13) which increased to (mean 43.57 ± 14.15) after yogic intervention. The learning ability score was (mean 15.60 ± 8.10) during the pre-test and moved significantly ($p < 0.0001$) to (mean 32.48 ± 12.21) after the post-test with intervention of om chanting and asana practice. The practice of om chanting and asanas practice shown significant improvement on short

term memory in SLCT. The scores improved significantly in DSST ($p < 0.0001$) from (mean 14.12 ± 6.13) in the pre- test to (mean 43.57 ± 14.15) in post-test. While various meditational techniques work at the mental level, all these practices are intended to develop a certain type of awareness within oneself, which in turn brings about a change in emotional and visceral function.

The letter cancellation is measure of different aspects of functioning of brain such as sustained attention, concentration, visual scanning and activation and inhibition of fast responses (Lezak, Howieson, Loring, Hannay, & Fischer, 2004)

The result of SLCT is in the line of previous study where the change was observed significantly after cyclic meditation (CM) and the result was compared with supine rest (SR). The study observed the range of magnitude in the CM group 14.5% and 11.31% in SR group after practice (Sarang & Telles, 2007). Current study also exhibited the similar result where all the children improved memory, learning ability and short memory after om chanting and practice of asanas which may be due to synchronization in brain functioning. It is evident that all the yoga based techniques give improvement in the performance of given tasks. In the same way another study where Sahaja Yoga meditation intervention improved executive functions which involves manipulation of information in verbal memory, attention span, visual-motor speed in patient with depression (Sharma, Das, Mondal, Goswami, & Gandhi, 2005).

The psychological measure DSST consists of different cognitive aspects such as visual discrimination, information processing speed, visual working memory, executive functions which have to play effectively for high performance and performance increase during intervention. The DSST assessment in this way is a complex cognitive multi-tasking test. It is very sensitive minimal brain injury (De Monte, Geffen, May, & McFarland, 2010) regardless of the locus of injury (Zillmer, Waechter, Harris, Khan, & Fowler, 1992) and sensitive to dementia (Emanuel et al., 2011). It is also used to show impaired performance which is indicative of global brain dysfunction and cognitive multi-tasking (Nakahachi et al., 2008).

The current study was observed with increased values of DSST which was highly significant. The earlier study showed that post assessment values increased after systematic practice in younger group. The cognitive performance was also improved in the younger group with information processing speed. There was significant improvement in attention, verbal, short-term memory and visual problem solving aspects in younger subjects (Graham & Lachman, 2012; Kaplan et al., 2009). Another study reported that age also plays very significant role in the memory, learning ability and short-term memory. Study reported correlation of cognitive architecture measure and improvement in cognitive performance with increasing value of DSST (Berger et al., 2006). This study is very much relevant in the sphere where younger healthy children with age group of 10 to 11 displayed improvement after 30 days om chanting and asanas practice. They improved in memory, learning ability and short-term memory. These results are in line of previous studies where values of DSST increased after post assessment during different types of intervention.

CONCLUSION

Study can be concluded with the following statement with finding based on the current result : a) om chanting and selected asanas are effective to improve and increase memory ; b) these practices are very much relevant to enhance learning ability of school children; c) om chanting and asanas are effective tool to improve the short term memory of school children ; d) current study is one of the contributory in the battery of knowledge with its finding with yogic intervention for enhancement of memory, learning ability and short term memory in school students ; e) the result suggest further research with objective assessment tool to generalize the finding of the study.

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