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Impact of Yoga Intervention on Exam Anxiety, Mindfulness, Attention & Memory in School Going Children

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ABSTRACT

Purpose: To present study the impact of yoga intervention on exam anxiety, mindfulness, attention, and memory in school-going children.

Methodology: The study started with the camp organized by a Principal of RA. Geeta Sr. Secondary School. The study population was taken from those interested to take part in the one-month yoga intervention on their own will both male and female with the age range of 13 to 15 years. Among the 80 students collected data, 40 subjects attended the one-month yoga intervention program. The intervention included seated mindfulness, breathing, loosening exercises, asana, and relaxation techniques. The pre-data were collected 1st day before the intervention, on the 30th day from the first day of the intervention. Test anxiety, mindfulness, attention & memory test were assessed before and after the intervention. Data were analyzed using R-Studio.

Findings: Exams were recognised as a big source of concern to many children, and the overall prevalence of exam anxiety shows to be increasing, possibly due to increased exams in schools and pressure of studies. Previous studies have reported the effects of Yoga in school-going children showing physical, cognitive, emotional, memory, attention, and mindfulness benefits.

Research limitations: The study was limit to Grade 8&9, 13-15-year-old girls and boys who could do asana. The study excluded those who could not do asana due to physical challenges.

Implications: Present outcomes propose that the yoga-based intervention illustrated a positive effect on examination anxiety, mindfulness, attention; and memory in school children. Yoga-based group of participants has shown better confront in exam anxiety, enhance mindfulness, attention; and memory. These yoga practices can be suggested to school-going children for better performance in academics and to attain joyful learning.

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Introduction

Yoga is a 5000 plus-year-old science, originated in India (Kaley-Isley et al., n.d.). Patanjali is known to be at the source of the creation of Yoga as known to modern man today. In the current scenario, pressures in students are worried about the exams which show anxiety, depression, and stress. The yoga intervention, encompassing asanas, pranayama, prathyhara, dharana, and dhyana, appears effective in helping children overcome stress and anxiety (Nanthakumar, 2018). Test tension, consideration, memory, and care are believed to be real stressors among younger students. Reasons for worry for school understudies are for the most part identified with rivalry. In India because of populace blast, the pressure and tension of 'making it throughout everyday life' get duplicated the same number of understudies are battling for too few seats. Tests and tests are distinguished as a noteworthy wellspring of worry to numerous kids, exam anxiety appears to be increasing, possibly due to increased tests in schools and pressures associated with the same. The purpose of this study is to understand the effects of Yoga intervention on Exam stress, anxiety, and other reported disorders after the focus group has been given one month of yoga practice. The students who took part in this study took a Yoga program that includes seated mindfulness, asanas and breathing exercises to regulate the breath.

Research Methodology

The study started with the camp organized by a Principal of RA. Geeta Sr. Secondary School. The study population was taken from those interested to take part in the one-month yoga intervention on their own will both male and female with the age range of 13 to 15 years. Among the 80 students collected data, 40 subjects attended the one-month yoga intervention program. The intervention included seated mindfulness, breathing, loosening exercises, asana, and relaxation techniques.

The pre-data were collected 1st day before the intervention, on the 30th day from the first day of the intervention. Test anxiety, mindfulness, attention & memory test were assessed before and after the intervention.

Intervention Module:

Yoga group received thirty days of yoga intervention. The intervention module was designed in a combination of standing, sitting, prone, and supine category asana along with meditative and relaxation postures. The

intervention components are asana, breathing awareness, DRT (deep relaxation technique) guided instruction, and positive affirmation. At the same time control group was engaged in normal day-to-day activities. The intervention started from 1st June to 1st July for 1 hour /day for one Month

Assessment Tools

Test Anxiety:

A test anxiety questionnaire is an assessment tool for assessing the test anxiety level in school-going children. To analyze the test anxiety questionnaire we need to add up the total from is column a score of 160 or higher indicates that the problem with test anxiety please be assured that the symptoms of anxiety in testing situations are not abnormal or strange they are the types of things people normally experience when they are under stress that is difficult to handle or when they are very and exhaust as they have probably noticed the feelings usually passed away quickly including the irrational thoughts when the test is over at the situations changes also it is quite possible to learn to control anxiety of the sky when we need to know how to go about it consult ASL AC counselor the books about anxiety management in the cell a c lab for the university counseling Centre for tips on the test exactly production(Suinn, 1969).

DLST (Digit Letters substitution Test):

DLST is an assessment tool for assessing the attention level in school-going children. The DLST consisted of a worksheet which has 8 rows and columns and randomly arranged digits in roads and columns. The students are asked to substitute as many targets as possible in the specified time of 90 seconds that letter substitution may be undertaken in a horizontal-vertical randomized manner by selecting a particular digit. The total number of substitutions and wrong substitutions are scored. The net score was obtained by detecting wrong substitutions from the total substitutions attempted. Five trained assistants at the neuropsychological test laboratory administered tests (Natu & Agarwal, n.d.).

Mindfulness: Mindfulness is a psychological state accomplished by concentrating one's mindfulness on the present minute, while smoothly recognizing and tolerating one's sentiments, contemplations, and substantial sensations, utilized as a remedial procedure. The care scale utilized here is an 8-thing scale intended to quantify a basic normal for dispositional care, viz., open or responsive consciousness and consideration regarding what is occurring in the present.

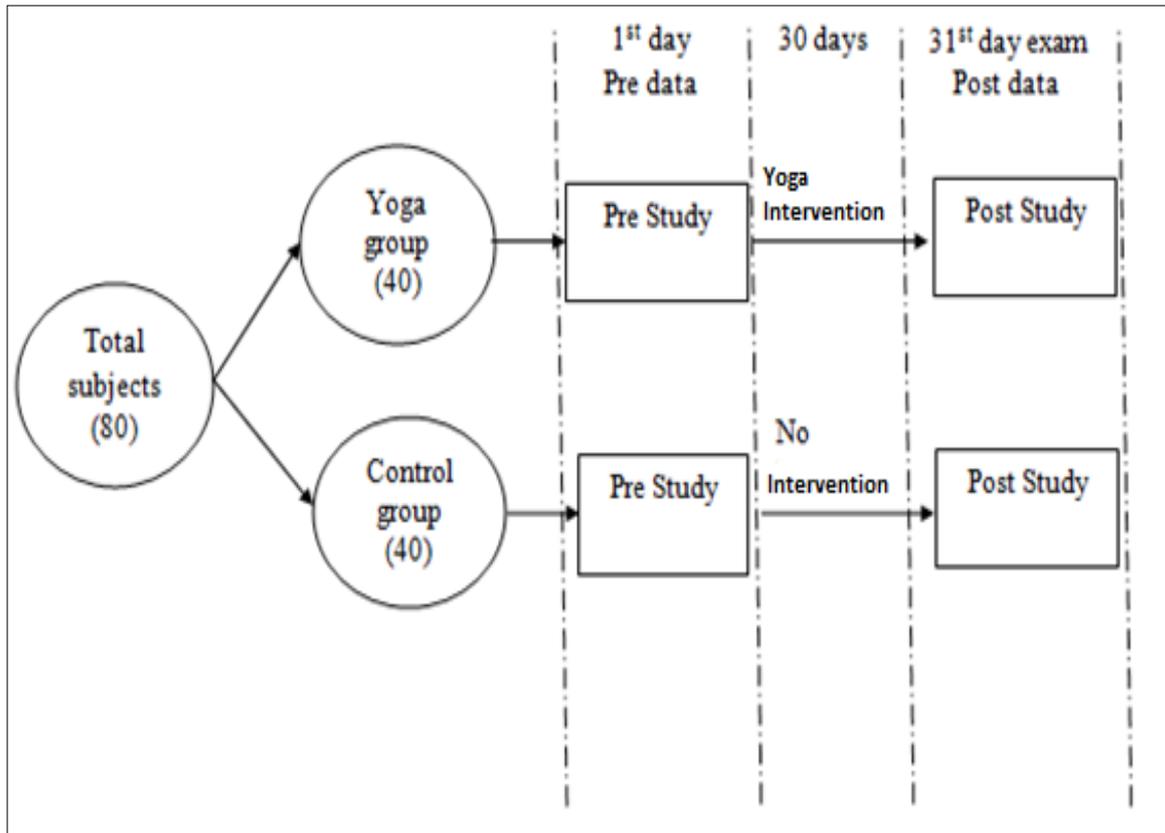


Fig 1: Design Between-group pre-post designs

This scale demonstrates solid psychometric properties. It taps a one-of-a-kind nature of cognizance which is identified with, and prescient of, an assortment of self-guideline and prosperity builds. The measure takes 8 minutes or less to finish.

Data Extraction Analysis

The extracted data were tabulated and analyzed using R-studio for results.

Results

The Shapiro Wilcoxon test was used to check the normality of baseline data. Data that met the normal distribution were analyzed used repeated measures of ANOVA. For multiple comparisons, Bonferroni Adjustment was used. For few variables like digit forward and digit backward the data was not normally distributed so nonparametric test Wilcoxon’s sign rank test for within and Mann Whitney U test for between-group analysis were used. Finally for Anxiety scores data was significantly different in the baseline itself, so the baseline correction was done using analysis of covariance (ANCOVA).

Mindfulness:

The 2x2 (Groups x States) repeated measures

ANOVA for Mindfulness, $F(1, 79) = 0.665$, $p > 0.05$, $\eta^2 = 0.008$ had no main significant effect on states. However, there was statistically significant interaction effect in State x Group, $F(1, 79) = 5.42$, $p < 0.05$, $\eta^2 = 0.064$. Post hoc multiple comparisons were done using Bonferroni adjustment, within comparison showed statistically significant improvement in mindfulness of yoga group but not in the control group.

Digit letter substitution test (DLST):

The 2x2 (Groups x States) repeated measures ANOVA for Digit substitution test $(1, 79) = 0.665$, $p < 0.01$, $\eta^2 = 0.086$ had main difference effect on states however statistically not significant. There was statistically significant interaction effect in State x Group, $F(1, 79) = 25.171$, $p > 0.05$, $\eta^2 = 0.002$. Post hoc multiple comparisons were done using Bonferroni adjustment, within comparison showed statistically significant improvement in DLST of Yoga group but not in Control group. However, there was an improvement in the yoga group also statistically significant.

Digit forward:

The data was not normally distributed; hence we have conducted a non-parametric test. In the Yoga, group means the value of the score

increased from 6.3 to 7.5 (19.04%) which was statistically significant $p < 0.01$, in contrast, there was in control group mean value of the

score also from 6.34 to 6.39 (0.78%) but there was no statistically significant $p > 0.05$.

| Variables | Control group | | | Yoga group | | |
|-------------|---------------|--------------|----------|--------------|---------------|----------|
| | Pre | Post | % change | Pre | Post | % change |
| Mindfulness | 22.15 ± 3.82 | 21.27 ± 5.66 | ↓3.9 | 22.05 ± 5.06 | 23.88 ± 3.88* | ↑8.299 |

Note: *Represents P-value which is $P < 0.05$ significance within Yoga group

Table1: Result table shows the mean ± SD values of mindfulness in both the groups

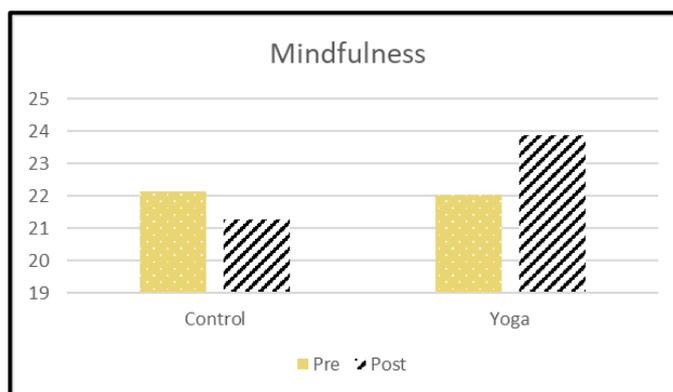


Fig 1: Mean ± SD values of Mindfulness in both the groups

| Variables | Control group | | | Yoga group | | |
|-----------|---------------|---------------|----------|---------------|----------------|----------|
| | Pre | Post | % change | Pre | Post | % change |
| DLST | 57.2 ± 16.59 | 57.35 ± 11.85 | 0.26 | 57.68 ± 15.29 | 63.61 ± 17.62* | 10.28 |

Note: *Represents P-value which is $P < 0.05$ significance within Yoga group

Table2: Result table shows the mean ± SD values of SDLT in both the groups

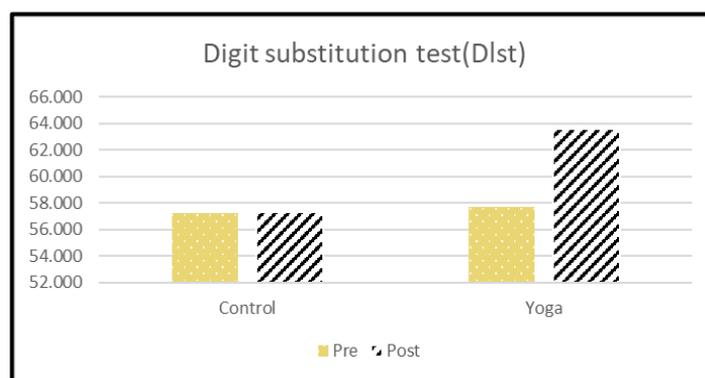


Fig 2: Mean ± SD values of SDLT in both the groups

| Variables | Control | | | Yoga | | |
|---------------|-------------|-------------|----------|-------------|---------------|----------|
| | Pre | Post | % change | Pre | Post | % change |
| Digit Forward | 6.34 ± 2.90 | 6.39 ± 2.68 | 0.78 | 6.30 ± 1.87 | 7.52 ± 1.73** | 19.04 |

Note: *Represents P-value which is $P < 0.05$ significance within Yoga group

Table 3: Result table shows the mean ± SD values of Digit forward in both the groups

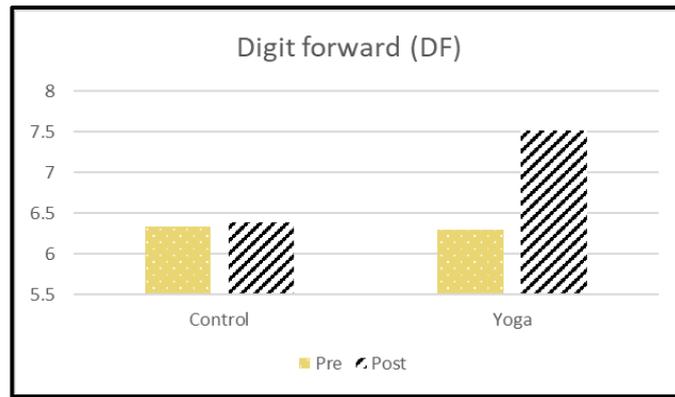


Fig 3: Mean ± SD values of Digit Forward in both the groups

| Variables | Control | | | Yoga | | |
|----------------|-----------|-----------|----------|-------------|----------------|----------|
| | Pre | Post | % change | Pre | Post | % change |
| Digit Backward | 2.90±2.25 | 2.95±2.25 | 1.72 | 3.95 ± 2.20 | 6.17 ± 2.37*** | 56.41 |

Note: *Represents P-value which is P<0.05 significance within Yoga group

Table 4: Result table shows the mean ± SD values of Digit Backward in both the groups

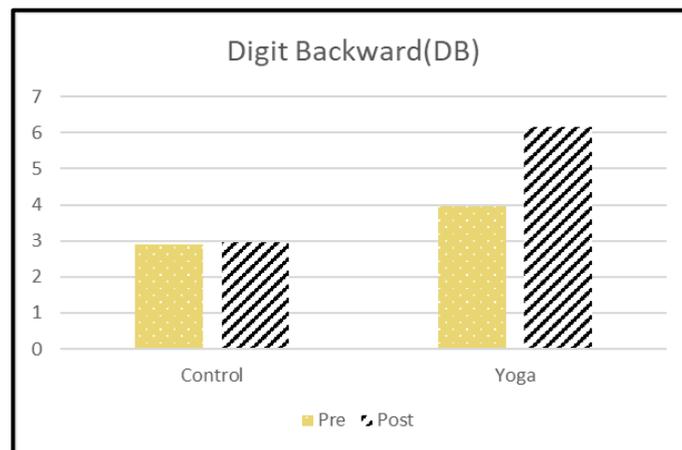


Fig 4: Mean ± SD values of Digit Backward in both the groups

| | Unadjusted | | | Adjusted | |
|---------|------------|--------|--------|----------|-------|
| | N | M | SD | M | SE |
| Control | 40 | 140.46 | 21.874 | 143.392 | 3.047 |
| Yoga | 40 | 161.93 | 28.376 | 158.923 | 3.086 |

Table 5: ANCOVA results for Anxiety

| Source | df | Mean Square | F | P-value | Partial Eta Squared |
|----------------|----|-------------|--------|---------|---------------------|
| Anxiety Scores | 1 | 31205.85 | 56.936 | <0.001 | 0.422 |
| GROUPS | 1 | 578.857 | 1.056 | 0.307 | 0.013 |
| Error | 78 | 548.089 | | | |

Table 6: Analysis of covariance for post-anxiety scores as a function of the group, using pre-anxiety scores taken as covariate

| Variables | Control group | | | Yoga group | | |
|--------------|---------------|-----------------|----------|--------------|--------------|----------|
| | Pre | Post | % change | Pre | Post | % change |
| Test Anxiety | 140.46±21.87 | 155.78±28.33*** | 10.9 | 161.93±28.38 | 166.83±32.76 | 3.02 |

Note: - ***Represents P-value which is P<0.001 significance within the Control group

Table 7: ANCOVA results for anxiety

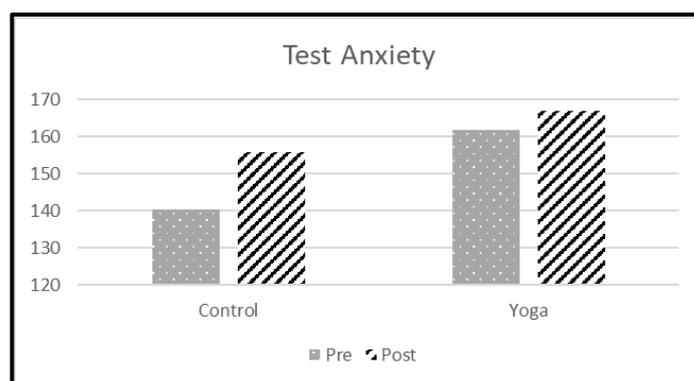


Fig 4: ANCOVA results for anxiety

Digit backward: The data was not normally distributed; hence we have conducted a non-parametric test. In the Yoga, group mean value of the score increased from 3.9 to 6.1(56.41%) which was statistically significant $p < 0.001$ similarly there was an increase in the control group's mean value of score also from 2.90 to 2.95 (1.72%) and no statistically significant.

ANCOVA Result for Anxiety

Adjusted and unadjusted group mean and variability for post anxiety scores using pre scores as a covariate.

Test-anxiety: Yoga and control group were compared at the baseline for test anxiety variable using independent sample t-test. At the baseline, there was a significant difference found in test anxiety. Mean score (M) illustrated that the yoga group had higher score (test-anxiety; $M = 161.93$, $SD = 28.376$) at baseline than the control group ($M = 140.46$, $SD = 21.874$).

Therefore, the analyses were conducted using analysis of covariance (ANCOVA), which uses pretest scores to statistically control for differences between the groups. ANCOVA results suggest that the assumption of equal slopes was checked and satisfied, as the interaction effect was not significant.

Results of the ANCOVA found that the magnitude of increase in test-anxiety score in the yoga group was significantly lower compared to the control group $F(1, 78) = 56.936$, $p < 0.001$, partial $\eta^2 = 0.422$.

Post hoc multiple comparisons were done using paired t-test, within comparison showed statistically significant improvement in test-anxiety of control group $p < 0.001$ but not in the yoga group.

Conclusion

Present outcomes propose that the yoga-based intervention illustrated a positive effect on examination anxiety, mindfulness, attention;

and memory in school children. Yoga-based group of participants has shown better confront in exam anxiety, enhance mindfulness, attention; and memory. These yoga practices can be suggested to school-going children for better performance in academics and to attain joyful learning.

Following recommendations can be made on the basis of the finding of the study;

- Regular and longer intervention is more beneficial
- Taking physiological measurements.
- Taking feedback from teachers on the effect of intervention and performance in school.
- Taking feedback from parents on the effect of intervention and behavior at home.
- Awareness programs to be conducted in schools.
- Randomized Control Trial to be done to get more detailed intervention.

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