# Effect of Braingym Exercise on Mitigating Level of Stress among High School Students in a Selected Government High School, Odisha

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## ABSTRACT

An interventional study attempted to evaluate the impact of brain gym exercise on mitigating stress levels in high school pupils in a selected government high school,odisha with objectives to measure the level of stress among high school students, to evaluate the effect of brain gym exercise on mitigating the degree of stress on high school students in order to determine the relationship between stress levels and certain demographic characteristics. Total 120 samples were choosed by using proportionate stratified random sampling techniques. Self-structured student stress scale was utilized to determine the amount of stress among the participants. Brain gym exercise was given for 15 days. The study result demonstrated a statistically significant difference in Levels of stress pre- and post-test in the experimental group at p-value<0.0001. Level of stress was significantly associated with gender as chi square value (12.513) at p value (.003) and education of father as chi square value (10.213) at p value (0.001) and father's profession as chi-square value (14.506) but no significant association with the other socio demographic variables. The study revealed that the brain gym exercise was efficient in stress reduction. Level among high school students.

**KEYWORDS:** stress, high school students, brain-gym exercise.

## ARTICLE DETAILS

## INTRODUCTION

Stress is defined as a state of emotional or physical stress any incident or concept that makes you feel unsatisfied, enraged, or anxious can set it off. Your body's reaction to a challenge or demand is called stress. In tiny doses, stress may be beneficial, such as when it helps you escape danger or make a deadline. Stress in everyday terms, is a reaction that people have when they are overburdened and fighting to cope with condition. These conditions can be associated to economics, work, relationship, study and other condition, but anything that presents a existent or recognized demands or risky to an individual's health can create stress. Stress is your corpse's reaction to any type of pressure or threat. When you sense danger, whether real or imagined, your body's defenses kick into high gear in a matter of seconds, automatic process known as the "fight-or-flight" reaction or the "stress response."(1)"Stress arises when individuals perceive that they cannot adequately cope with the demands being made on them or with threats to their well-being." (LAZARUS, R.S., 1966)

"Stress" has earned the moniker "Health Epidemic of the 21st Century" According to the World Health Organization, it costs American businesses up to $300 billion every year.. Stress may have a negative impact on both our mental and physical wellbeing. According to a recent survey conducted in the United States, more than half of people believe that stress has a negative influence on their job productivity. Stress levels in the United States increased by 10–30% across all demographic groups between 1983 and 2009..(2)

Academic stress is mental anguish triggered by the anticipation of displeasure involved with academic failure, or simply the lack of knowledge that such failure is a possibility. Many academic obligations are placed on students, such as school examinations, responding to inquiries in class, and

demonstrating academic progress courses. Comprehending what the instructor is teaching, competing with their peers, and while still meeting the educational goals of teachers and parents. These requirements may exhaust or exceed the pupils' limited resources. As a result, individuals may experience stress as a result of the pressure, which is linked to the accomplishment of an academic goals.(3). The conversion of pupil from secondary school level to the college level is intrinsically strain-full for students. It could create emotional, educational and communal disturbance to them. This rises as the teaching technique, crowds, economics, contention, relationship in collaboration with students (particularly with opposite sex) and educator deviate significantly from that of secondary school. Furthermore, the educational pressure that kids experience at the collegiate level is intimidating for many..(4)

## METHODS
### Research design and settings
A quantitative research strategyand true experimental research design was chosen for this study. This study was conducted among 120 students of high school, puri. The proportionate stratified randomized sampling technique was used for this study. Academic stress scale is 20 items multidimensional self-structured scale deliberate to examine the causes of students stress studied in high school. The reliability of the tool was tested by using Cronbach co-efficient formula and it is found to be reliable at 0.92. the socio demographic data was collected by a self-structured questionnaire and deals with a total of 9 items. Those are age, Gender, religion, and family structure, percapita monthly income of family, the father's education, the mother's education, the father's occupation, and the mother's occupation. Several specialists gave their approval to the tool. The tool was tested with 10 participants to check the reliability test. Then by purposive sampling technique method, one government high school was selected from puri. prior permission was taken from headmaster of the selected school. The researcher introduced herself to the students and said the permission. On the first day of the meeting, a pre-test was held, by administering self-structured academic stress scale for both experimental group and control group. After completion of pre-test,The brain gym exercise which is consists of certain physical body movements, was given to the test group for a period of 15 days and the total duration of the intervention was 15-20 minutes per day. At the conclusion of the activity, a post-test was conducted for both interventional and control group. At last participants were thanked for their co-operation and participation in the study. The collected data was analyzed using MS Excel. the baseline data (demographic data)were examined in terms of frequency and proportion. Analysis of the efficiency ofthe brain gym exercise was calculated by paired and unpaired t=test. To

identify the association between sociodemographic variables with the level of stress chi-square test was used.

## RESULTS
### Section-1:-
**Findings from description study samples based on socio-demographic factors by using frequency and percentage.**
The vast majority of the research participants in the interventional group (65%) and the control group (60%) were between the ages of 13-14 and 15-16, respectively. Majority of the study participants (55%) in interventional l group were female and (58.33%) in control group were male. Hindus made up the majority of the research participants (95%) in the interventional group and (100%) in the control group. Majority of the research participants (50%)of Both the interventional and control groups were both members of a nuclear family.The per capita family's monthly incomeof the majority of the study participants (50%) in the interventional group and 58 percent in the control group was 5000-10000 and 10001-20000, respectively.The majority of participants' fathers (35 percent in the interventional group and 33.33 percent in the control group) finished high school and higher education, respectively.Most of the mother of participants (50%) in the experimental group and 50% in the control groupcompleted secondary and primary education respectively.The majority of the fathers of participants in the experimental group (50%) and the control group (55%) were self-employed and jobless, respectively.The majority of the moms in both the experimental (42%) and control (63.33%) groups were unemployed.

### Section-2:-
**Findings related to evaluation of brain gym exercise based on the stress level**
In the test group, maximum students (45%) were very stress, 25% were moderate tension in pre-test. In control group majority of students (53.3%) were very stress, (20%) were moderate stress in pre-test. In experimental group, maximum students (63%) were mild stress, 36% were moderate tension before the test. In control group majority of students (45%) were very stress, (25%) were moderate stress after test. The mean post-test level of student stress score in the interventional group was 37.98+ 6.47, and the mean pre-test level of student stress score was 61.07+15.74, with a mean difference of -1.583 that was statistically significant as evidenced by a t value of 10.17 for df 59 at the 0.05 level of significance.The control group's pre-test and post-test mean scores for degree of student stress were 62.65+14.90 and 62.42+15.34, respectively.The paired "t " valuewas -0.575(p=0.9317) at 59 degree of freedom which was more than tabulated value at 0.05 significant level & was not statistically significant. The interventional group's pre-test score differed significantly from the control groups. (61.07±15.74) and control group pre test score was (62.65±14.90) as evident by t test value -566 (df=118) at

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p=0.000*which is statistically significant. The experimental group's post-test score (37.98+-6.477) differed significantly from the control group's. & control group post test score was (62.42+-15.342) as evident by t test value -11.365 (df=118) at p=<.0001* which is extremely statistically significant. Thus it can be inferred that the brain gym exercise in the experimental group, it proved helpful in lowering student stress levels.

**Section-3:-**

**Findings related to association of level of stress with selected demographic variables**

Level of stress was significantly associated with gender as chi square value (12.513) at p value (.003) and education of father as chi square value (10.213) at p value (0.001) and the chi-square value of the father's employment is 14.506, but not for the other socio demographic characteristics.

**Table-4.1. Subject frequency and percentage distribution according to age, gender, religion, and type of family as per self-structured interview schedule ingroups (experimental and control)**

| Sl. No | Parameter | Experimental group | | Control group | |
|---|---|---|---|---|---|
| 1 | AGE IN YR | Frequency (f) | Percentage (%) | Frequency (f) | Percentage (%) |
| | 1)  10-12 | Nil | - | 3 | 5 |
| | 2)  13- 14 | 39 | 65 | 18 | 30 |
| | 3)  15-16 | 17 | 25 | 56 | 60 |
| | 4)  17-18 | 6 | 10 | 3 | 5 |
| 2 | GENDER | | | | |
| | 1)Male | 27 | 55 | 35 | 58.33 |
| | 2) Female | 33 | 45 | 25 | 41.66 |
| 3 | RELIGION | | | | |
| | 1)Hindu | **57** | **95** | **60** | 100 |
| | 2) Muslim | 3 | 5 | nil | - |
| | 3) Christian | nil | - | nil | - |
| | 4) Sikhism | nil | - | nil - | - |
| 4 | TYPES OF FAMILY | 30 | 50 | 30 | 50 |
| | 1)  Nuclear | 27 | 45 | 30 | 50 |
| | 2)  Joint | 3 | 5 | Nil | - |
| | 3)  extended | | | | |

**Table-4.2. Subject frequency and percentage distribution according to per-capita monthly income of family, education of father, education of mother as per self-structured interview schedule in experimental and control group**

| Sl.No | Parameter | Experimental group | | Control group | |
|---|---|---|---|---|---|
| 1 | PERCAPITA  MONTHLY  INCOME OF FAMILY | Frequency (f) | Percentage (%) | Frequency (f) | Percentage (%) 33.33 |
| | 1)  5000-10000 | **30** | **50** | 20 | **58** |
| | 2) 10001-20000 | **12** | 20 | **35** | 5 |
| | 3) 20001-30000 | **3** | 5 | 03 | 3 |
| | 4) >30000 | **15** | 25 | 02 | |

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| 2 | EDUCATION OF FATHER 1) Primary | 6 | 10 | **15** | **25** |
|---|---|---|---|---|---|
|  | 2) Secondary | 12 | 20 | 18 | 30 |
|  | 3) Higher secondary | 18 | 30 | **20** | **33.33** |
|  | 4) Graduation | **21** | **35** | 6 | 10 |
|  | 5) Post-graduation | 3 | **5** | 1 | 1.66 |
| 3 | EDUCATION OF MOTHER<br>1) Primary<br>2) Secondary | 12 | 20 | **30** | **50** |
|  | 3) Higher secondary | **30** | **50** | 10 | 16.66 |
|  | 4) Graduation | 12 | 20 | 8 | 13.33 |
|  | 5) Post- graduation | 3 | 5 | 12 | 20 |
|  |  | 3 | 5 | nil | - |

**Table-4.3. Subject Distribution of frequency and percentages according to occupation of father, occupation of mother as per self-structured interview schedule in groups (experimental and control)**

| Sl.no | Parameter | Experimental group | | Control group | |
|---|---|---|---|---|---|
| 1 |  | Frequency (f) | Percentage (%) | Frequency (f) | Percentage (%) |
|  | OCCUPATION OF FATHER<br>1) Employees of the government | 3 |  |  | - |
|  | 2) Employees of the private sector |  | 5 | Nil | 10 |
|  | 3) Working for oneself | 18 | 30 | 6 | 3 |
|  | 4) unemployed | **30** |  | 21 |  |
|  | OCCUPATION OF MOTHER | 9 | **50** | **33** | **5** |
|  |  |  | 15 |  |  |
| 2 | 1) Employees of the government<br>2) Employees of the private sector | Nil | **-** | 1 | 1.66 |
|  | 3) Working for oneself | 6 | 10 | 3 | 5 |
|  | 4) unemployed | 12 | 20 | 18 | 30 |
|  |  | **42** | **70** | **38** | **63.33** |

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**Figure-4.4. Frequency (f) and percentage (%) distribution of level of stress of pre-test score in both experimental group and control group through graphic a presentation.**
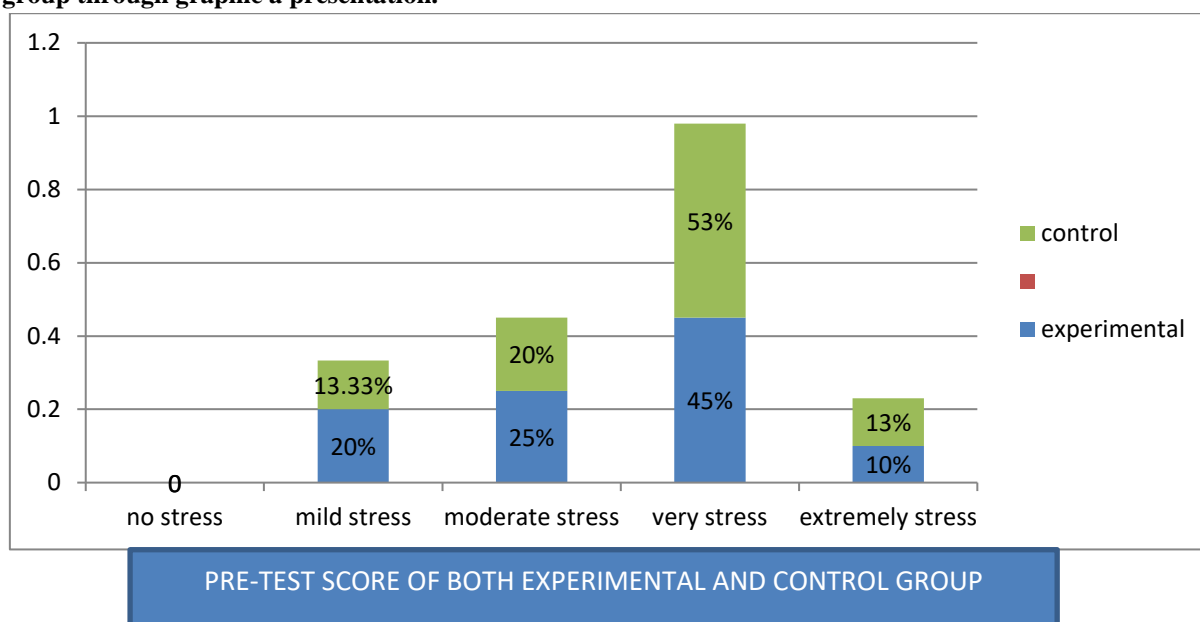


**Figure-4.5. The percentage (%) and frequency (f) distributions of stress levels of post-test score both in the experimental and control groupsthrough graphical presentation.**
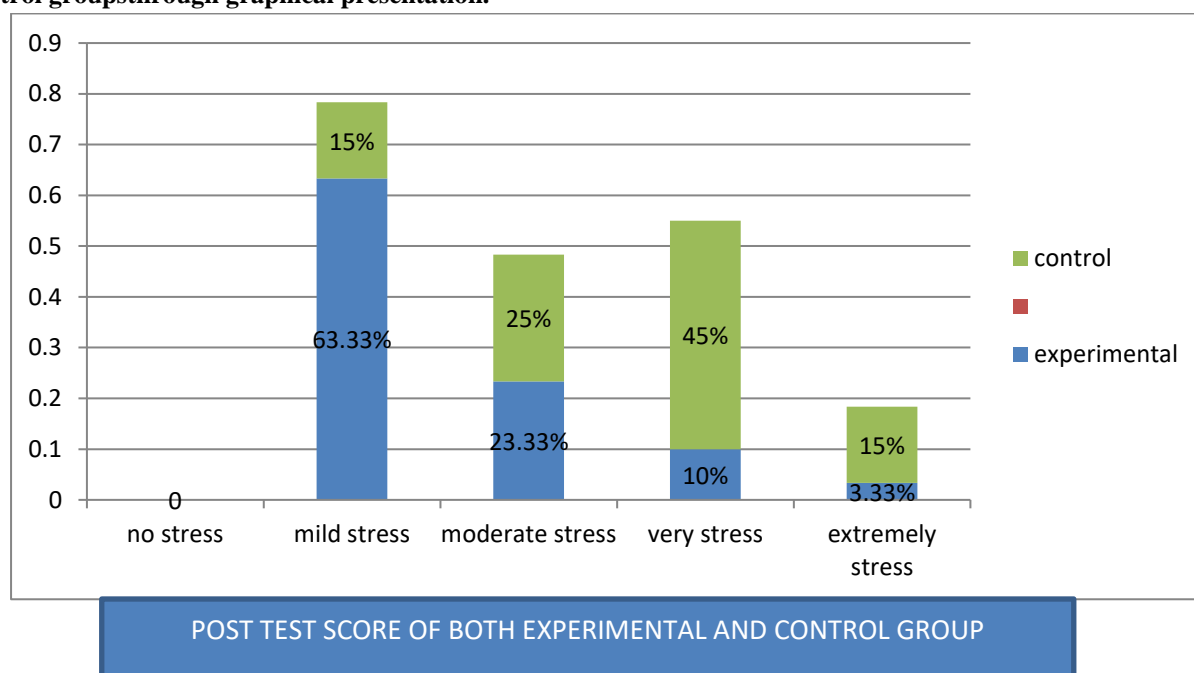


**Table-4.6. Comparision between pre-and post-test scores of the experimental group's stress levels utilizing "t" test.**
N=60

| Sl no | Experimental group | Mean+_ SD | df | t-value | P value |
|-------|--------------------|-----------|-----|---------|---------|
| 1 | Pre test | 61.07+- 15.74 | 59 | | |
| | | | | 10.17 | <.00001* |
| 2 | Post test | 37.98+- 14.90 | | | |

P<0.05= statistically significant

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**Table-4.7. Comparison of the control group's stress level pre- and post-test scoresusing "t" test.**

N=60

| Sl no | Control group | Mean+_SD | | df | t-value | P value |
|---|---|---|---|---|---|---|
| 1 | Pre test | 62.65+-14.90 | | 59 | | |
| | | | | | 0.575 | 0.19317* |
| 2 | Post test | 62.42+-15.34 | | | | |

P<0.05= statistically significant

**Table-4.8. Comparision between employing a pre-test score of degree of stress in the experimental and control groups "t" test**

N=n1+n2=120

| Sl no | Research group | Mean+_SD | MD | SEM | df | t-value | P value |
|---|---|---|---|---|---|---|---|
| 1 | Experimental group(n1) | 61.07+-15.74 | | 2.033 | | | |
| | | | | | 118 | -566 | 0.0001* |
| | | | -1.583 | | | | |
| 2 | Control group(n2) | 62.65+-14.90 | | 1.925 | | | |

P<0.05= statistically significant

**Table-4.9. Comparison between Level of stress after post-testing in the experimental and control groupsusing "t" test.**

N=n1+n2=120

| Sl no | Research group | Mean+_SD | MD | SEM | df | t-value | P value |
|---|---|---|---|---|---|---|---|
| 1 | Experimental group(n1) | 37.98+-6.477 | | .836 | | | |
| | | | -24.433 | | 118 | -11.365 | 0.0001* |
| 2 | Control group(n2) | 62.42+-15.342 | | 1.981 | | | |

P<0.05= statistically significant

**Table-4.10. chi square analysis of age, gender, religion, types of family, percapita monthly income of family, Father's and mother's education, occupations with stress levels, and father's and mother's occupations**

N=120

| Sl no | Demographic variables | Chi square | df | P value |
|---|---|---|---|---|
| 1 | Age | 1.295 | 6 | 0.977 |
| 2 | Gender | 12.513 | 3 | 0.003* |
| 3 | Religion | 5.780 | 3 | 0.850 |
| 4 | Types of family | 2.987 | 6 | 0.810 |
| 5 | Percapita monthly income of family | 6.887 | 9 | 0.649 |
| 6 | Education of father | 10.213 | 2 | 0.001* |
| 7 | Mother's Education | 8.070 | 2 | 0.780 |
| 8 | Occupation of father | 14.506 | 8 | 0.0035* |
| 9 | Profession of mother | 2.181 | 9 | 0.988 |

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## DISCUSSION REGARDING A HIGH SCHOOL STUDENT'S DEGREE OF STRESS

Findings in current study about level of stress among high school student revealed that in pre-test 45% and 25% students were having very stress and moderate stress in experimental group. 53% and 20% students were having very stress and moderate stress in control group. This current study are contradictory to findings of other study, which was conducted in 2014 by J.A Akande that resulted that 37.3% students had low stress, 45% students had moderate stress and 10.8% had high level of stress.The present study revealed that post test score of experimental group and control group unpaired t test value-11.365 (df=118)at p=<.0001* which is extremely statistically significant. This shows significant difference between stress levels in the interventional and control groups and brain gym exercise was effective. The present study was supported MuhamadSaifulBahriYusoffetal (2014) on a brief stress reduction intervention to reduce stress among medical students .study findings concluded indicated the post-test results of the intervention and control groups were significantly different. (t-value -1.345, p-value 0.189).When compared to baseline readings, demonstrated a substantial reduction following the brief stress reduction intervention (P 0.001 for all). (31)

## CONCLUSION

The study's findings led to the following conclusion: that the brain gym exercise is effective on mitigating the stress level of high school students.

## REFERENCES

I. Fink G. Stress : Definition and history Author ' s personal copy. 2017;(January 2010).

II. Lal K, Rohtak DR. ACADEMIC STRESS AMONG ADOLESCENT IN RELATION TO. 2014;123–9.

III. Yumba W. Academic Stress : A Case of the Undergraduate students. 2008;

IV. Yikealo D, Yemane B, Karvinen I. The Level of Academic and Environmental Stress among College Students: A Case in the College of Education. Open J Soc Sci. 2018;06(11):40–57.

V. Mazumdar H, Gogoi D, Buragohain L, Haloi N. A Comparative study on stress and its contributing factors among the Graduate and Post-graduate students. 2012;3(1):399–406.

VI. Nagarkar MR, Rokade P, Malwade M, Abdul DAPJ. Effectiveness of brain gym activity on quality of life in autism spectrum disorder. Int J Healthc Biomed Res [Internet]. 2018;(January):11–6. Available from: http://ijhbr.com/pdf/ijhbr January 2018 11-16.pdf

VII. Keinath K. The Effects of Brain Gym ® Activities on Second- Grade Students ' Academic Performance and Handwriting Skills. 2005;2005.

VIII. Khan Z, Abul Barkat L, Ahmad N. The level of stress in male and female school students. J Educ Pract [Internet]. 2015;6(13):166–8. Available from: https://files.eric.ed.gov/fulltext/EJ1080498.pdf

IX. Kováčiková E, Reid E. Using Total Physical Response and Brain Gym Exercises to Increase Mindfulness in the English Language Learning Classroom. 2018;(November).

X. Chellamuthu S, Kadhiravan D. Academic stress and mental health among high school students. Indian J Appl Res. 2017;7(5):404–6.

XI. Rana A, Gulati R, Wadhwa V. Stress among students : An emerging issue S OCIAL S CIENCES Stress among students : An emerging issue. 2019;(August):0–5.

XII. Khan MJ, Altaf S, Kausar H. Effect of perceived academic stress on students' performance. FWU J Soc Sci. 2013;7(2):146–51.

XIII. Maguire T. Brain Gym ®. 1997;(Part 2):1–12.

XIV. Bhargava D, Trivedi H. A Study of Causes of Stress and Stress Management among Youth. 2018;11(03):108–17.

XV. Abduh B, Tahar MM. The Effectiveness of Brain Gym and Brain Training Intervention on Working Memory Performance of Student with Learning Disability. J ICSAR. 2018;2(2):105–11.

XVI. Saiful M, Yusoff B. Effect of a brief stress reduction intervention on medical students ' depression , anxiety and stress level during stressful period EFFECTS OF A BRIEF STRESS REDUCTION INTERVENTION ON MEDICAL STUDENTS ' DEPRESSION , ANXIETY AND STRESS LEVEL DURING STRESSF. 2014;(June).