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BOOSTING ATTENTION AND GRADES WITH BRAIN GYM EXERCISES FOR CHILDREN WITH ATTENTION DEFICIT AND HYPERACTIVITY DISORDER

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ABSTRACT

AIM

To determine the effect of brain gym exercise on attention and academic performance of children with ADHD

OBJECTIVES

- To assess the severity of attention deficit using Vanderbilt ADHD diagnostic teacher rating scale
- To assess the academic performance using academic performance rating scale
- To find the effect of brain gym exercise on attention and academic performance of children with ADHD

METHODOLOGY

Totally 30 children were included in this study through convenient sampling, 15 in the experimental group and 15 in the control group with age range 6-12 years participated in the current study. The experimental group underwent 40 sessions of brain gym exercises along with conventional therapy session whereas controlled group with only conventional therapy.

RESULT

Statistical significance is present in the experimental group than the control group with regard to academic performance, mean values are 61.6 and 52.5, 't' value is 12.198 and the 'p' value is < 0.0001. it indicates the statistical significant difference between control and experimental group.

CONCLUSION

From this study, it is concluded that there is significant improvement in academic performance in children with ADHD inattention.

Keywords: Brain gym exercises, Attention deficit and hyperactivity disorder, academic performance

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is the most common neurodevelopmental disorder in childhood with persistence into adulthood. ADHD is considered a chronic and debilitating disorder and is known to impact the individual in many aspects of their life including academic and professional achievements, interpersonal relationships, and daily functioning **[1]**. Symptoms of ADHD include inattention (not being able to keep focus), hyperactivity (excess movement that is not fitting to the setting) and impulsivity (hasty acts that occur in the moment without thought).

An estimated 8.4% of children and 2.5% of adults have ADHD is often first identified in school- aged children when it leads to disruption in the classroom or problems with schoolwork **[2, 3]**. A children with inattention may have trouble remaining on task, unable to pay close attention to detail and careless when performing tasks such as school work, job, or other activities, maintaining focus, and maintaining organization **[3]**.

Children with ADHD show significant academic underachievement, poor academic performance, and educational problems. The literature reports conflicting data about whether the academic and educational characteristics of ADHD inattention are substantially different from the characteristics of ADHD combined type. However, a large survey of elementary school students found children with ADHD inattention were more likely to be rated as below average or failing in school compared with children with ADHD combined and ADHD predominantly hyperactive-impulsive subtype.

Inattention in early childhood has been wide range of behavioral and social problems, including poor academic achievement. It has multidimensional concept, where the items reflect impairment of sustained and focused attention, impaired working memory, distractibility, forgetfulness, as well as impaired ability to

organise and plan activities and task. Most children may be distracted by external stimuli in classroom situation and these distractions will probably be especially hard to handle by a child who has problems maintaining attention and engagement in a task. Specific patterns of inattentive behavior that have most detrimental effect on the child's present and future function at school. Identification of important features of inattentive behavior will therefore be of great importance when developing remediation procedures.

Academic function can be negatively impacted by a variety of disabilities, including ADHD, and higher cognitive skills are consistently related to increased academic function many studies have shown that early attention difficulties are math, reading and writing difficulties, and ADHD frequently co- occurs with other learning disabilities **[4]**. A major concern of ADHD children has performance in school such as poor academic performance can result in failing grades, skipping school, dropping out of high school or not attending college.

According to Brain gym, as a general concept, has come to the fore out of the area of physical education and exercise on learning and cognitive development. Brain gym is more than sufficient justification in support of physical activity contributing to increased attention span, improved focus, better behavior management, and better learning **[5]**. When the physical activities included emphasis on cognitive tasks, add academic learning to physical tasks and specific academic gains occurred **[6]**.

Brain gym exercise is effective and consist of simple activities. which work so well, as they often bring dramatic improvements in areas such as, concentration and focus, academics: reading, writing, test taking, physical coordination, self responsibility, organizational skills. This study aims to improve academic performance in ADHD children by expanding attention spans with brain gym exercise.

AIM

To determine the effect of brain gym exercise on attention and academic performance of children with ADHD

OBJECTIVES

- To assess the severity of attention deficit using Vanderbilt ADHD diagnostic teacher rating scale
- To assess the academic performance using academic performance rating scale
- To find the effect of brain gym exercise on attention and academic performance of children with ADHD

Methodology

It is a quazi experimental study conducted with convenient sample of 30 children. Children were selected according to the selection criteria, in

which they are divided into experimental and control group. Children are screened by using Vanderbilt ADHD diagnostic teacher rating scale **[7]**. The selected children were divided equally into two group experimental group and control group. Children with ADHD diagnosed by pediatrician or psychologist, Both male and female children, age group between 6- 12 years were included. ADHD children with comorbid condition such as seizure disorder excluded. The academic performance of the children were assessed using Academic performance rating scale[8]. The experimental group received brain gym exercises along with conventional therapies and the control group received only conventional therapy. The participants in the experimental group receive 40 sessions of Brain Gym Exercises. Each session last for 45 minutes. Each session of brain gym exercise consists of 8 exercises. Cross crawl **[8]**, Double doodle **[9]**, Lazy eight **[10]**, Arm activation **[10]**, Thinking cap **[10]**, The elephant **[10, 12]**, Alphabet 8 **[10, 11]**, Gravity gilder **[12]**. After the intervention Period post test was conducted and Scored were statistically analysed.

DATA ANALYSIS

1	Number of subjects	30
2	Minimum age	6
3	Maximum age	12
4	Mean age of experimental group	9.8
5	Mean age of control group	7.6
6	Number of male children	21
7	Number of female children	9

Table 1 and Graph 1 shows the pre -test academic performance of the control and experimental groups. The mean values are 56.6 and 61.6 respective and the 't' value is 2.653 and 'p' value 4.330 which shows it is not statistically significant.

Table 2 and Graph 2 shows the comparison of the academic performance between the control groups pre-test and pos-test. The Mean values are 59.6 respective and the 't' value is 2.136and 'p' value 0.0508which shows it is not statistically significant.

Table 3 and Graph 3 shows the comparison of the academic performance between the experimental groups pre-test and post-test. The mean values are 3 61.6 and 52.5 respective and the 't' value is 12.198 and 'p' value is < 0.0001 which shows it is extremely statistically significant.

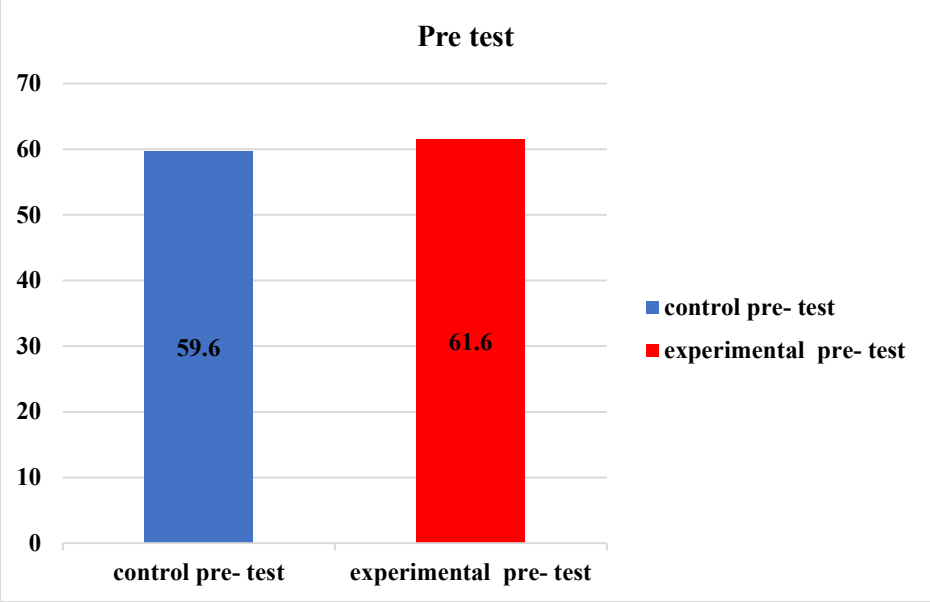
Table 4 and Graph 4 comparison of academic performance between the control group poste-test and the experimental group post-test. The mean values are 2.059 and 2.729 respective and the 't' value is 7.061 and 'p' value is < 0.0001whichshows it is extremely statically significant.

Table 5 and Graph 5 comparison of attention performance between the control group pre-test and post-test. The mean values are 23.13 and 22.67respective and the 't' value is 2.43 and 'p' value is < 0.19which shows it is extremely statically non-significant.

Table 6 and Graph 6 comparison of attention performance between the Experiment group pre-test and post-test. The mean values are 22.93 and 15.60 respective and the 't' value is 12.47 and 'p' value is < 0.0001 which shows it is extremely statically significant.

Table 1: Comparison of academic performance between pre test control group and experimental group

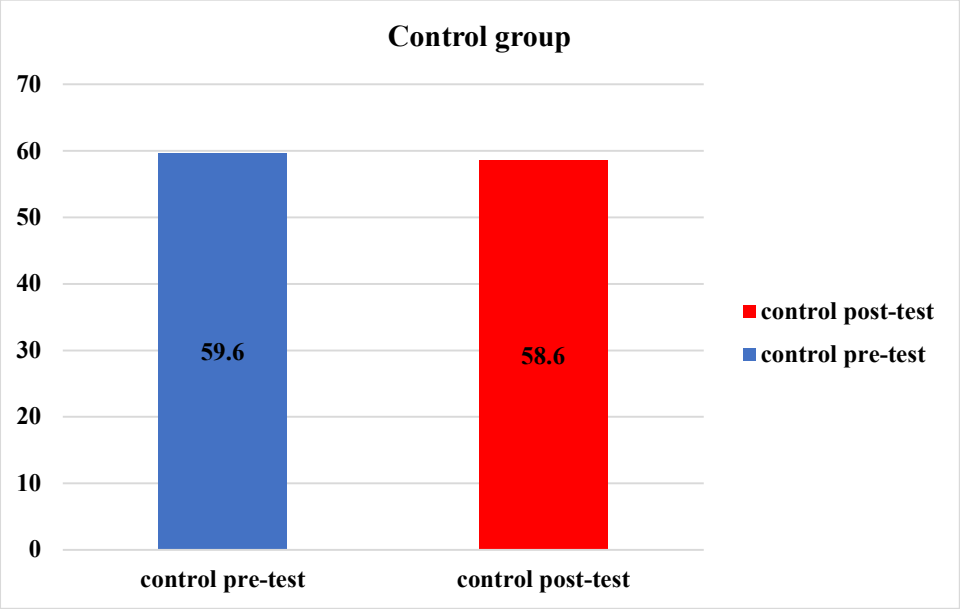
GROUP	TEST	MEAN	S.D VALUE	't' value	'P' value
Control group	Pre-test	59.6	2.653	1.5225	0.1391
Experimental group	Pre-test	61.6	4.330		



Graph 1: Shows the difference of academic performance between control and experimental group in pre- test

Table 2: Comparison of academic performance between pre- test and post-test control group

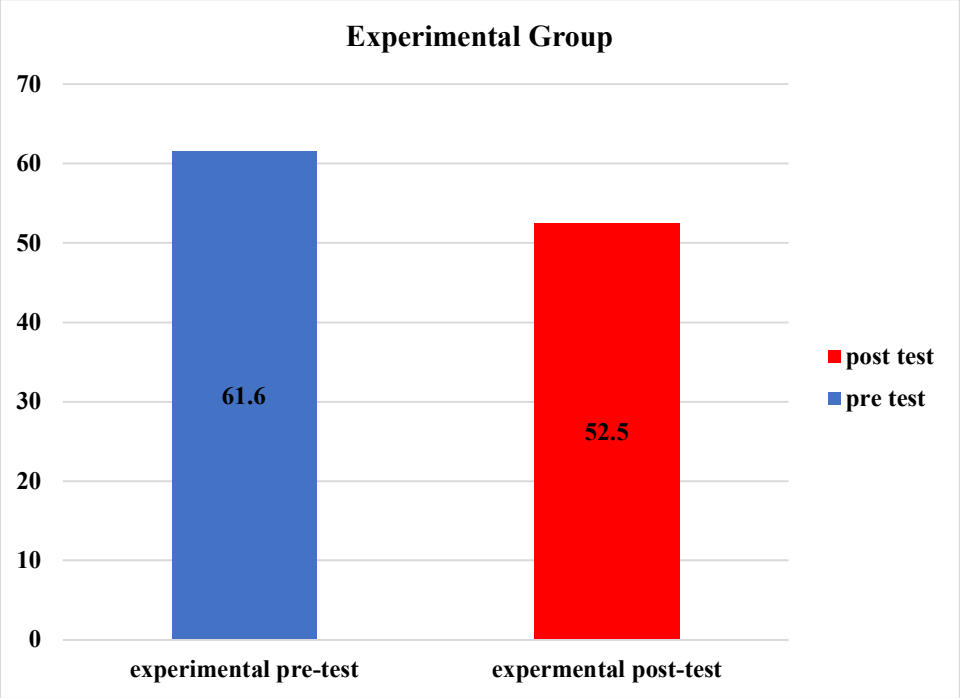
Group	Test	Mean	S.D value	't 'value	'P' value
Control group	Pre test	59.6	2.653	2.136	0.0508
	Post test	58.6	2.059		



Graph 2: Graph 2 shows the difference of academic performance between control pretest and post- test

Table 3: Comparison of academic performance between experimental group pre-test and post- test

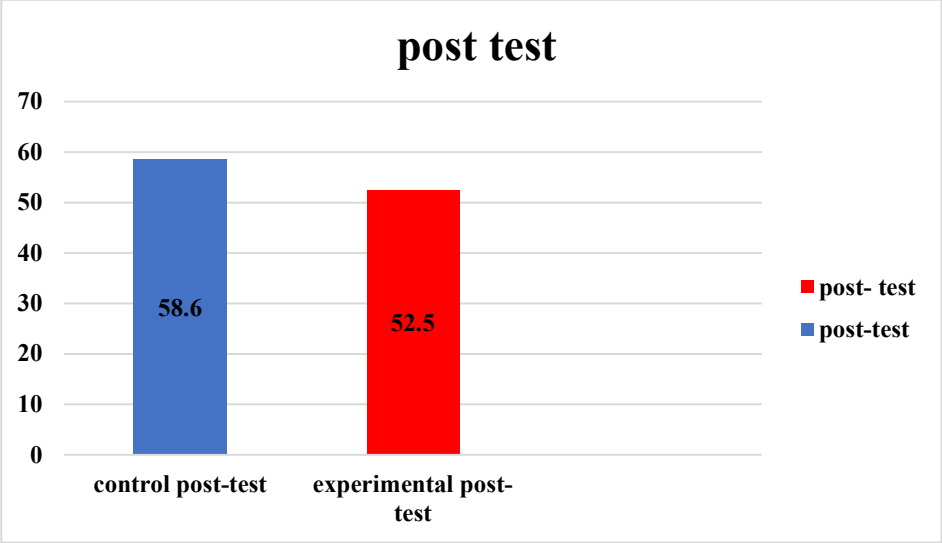
GROUP	TEST	MEAN	S.D VALUE	't' value	'P' value
Experimental group	Pre-test	61.6	4.330	12.198	P< 0.0001
	Post-test	52.5	2.729		



Graph 3: graph 3 shows the difference of academic performance between experimental group pre-test and post-test

Table 4: Comparison of academic performance between control group and experimental group in post- test

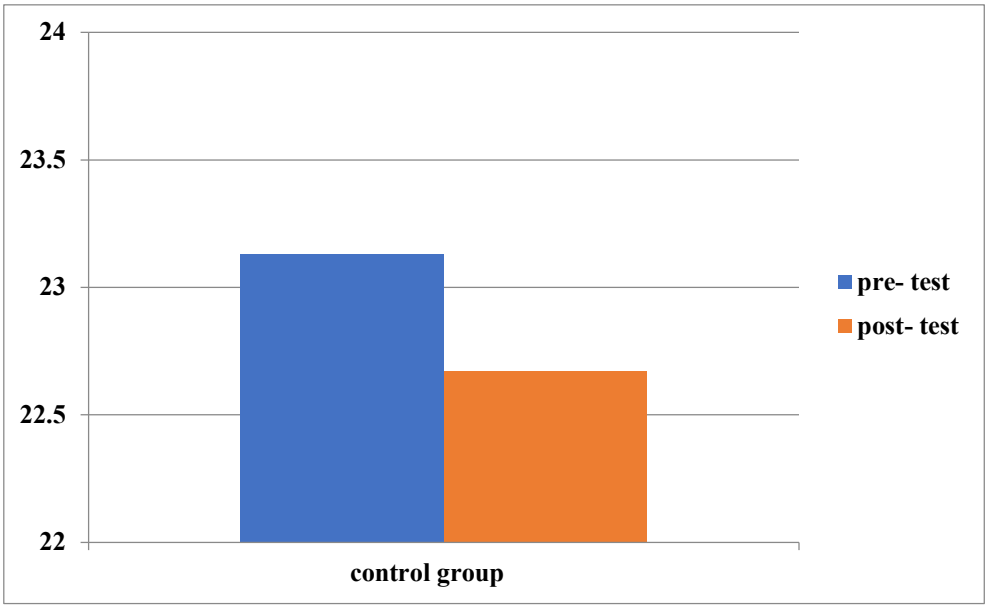
GROUP	TEST	MEAN	S.D VALUE	't' value	'p' value
Control group	Post- test	58.6	2.059	7.061	P< 0.0001
Experimental group	Post-test	52.5	2.729		



Graph 4: graph shows the difference of academic performance between control group and experimental group in post- test

Table 5: Comparison of attention level between pre and post- test of control group

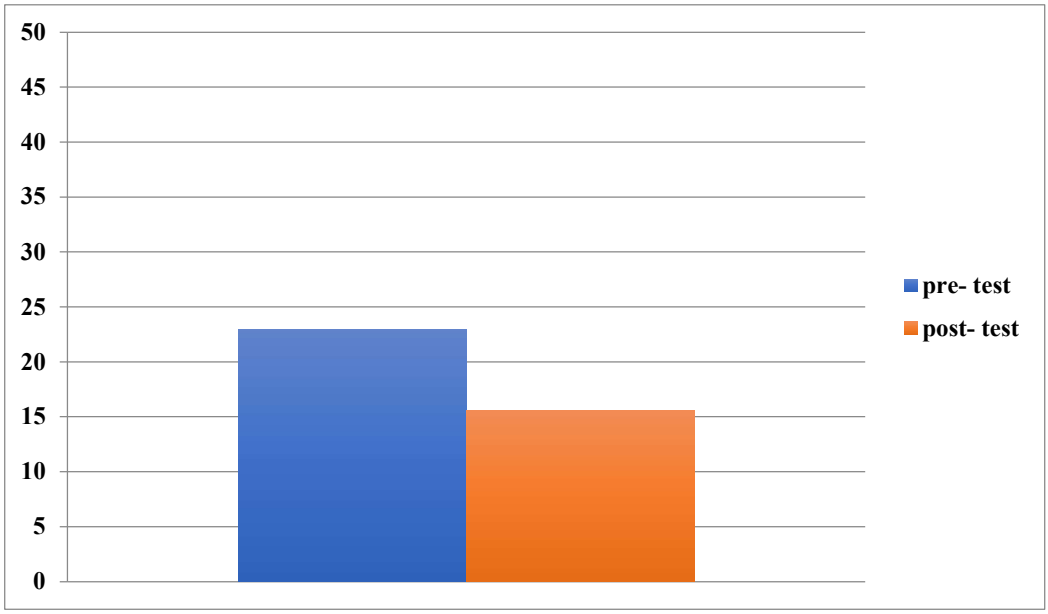
GROUP	TEST	MEAN	S.D	't' value	'p' value
Control group	Pre - test	23.13	0.83	2.43	P< 0.19
	Post-test	22.67	0.82		



Graph 5: graph shows the difference of attention level between control group pre and post- test

Table 6: Comparison of attention level between experiment group pre and post- test

GROUP	TEST	MEAN	S.D	't' value	'p' value
Experimental group	Pre- test	22.93	1.39	12.47	P< 0.0001
	Post-test	15.60	1.80		



Graph 6: graph shows the difference of attention level between Experimental group pre and post- test

DISCUSSION

The aim of the study was to find out the effect of brain gym exercise on attention and academic performance of children with ADHD. This study conducted at Sri Sarva Vidhya Multispeciality Therapy Centre, Erode and Occupational Therapy Foundation, Erode.

A total of 30 male and female ADHD inattention children selected from inclusion criteria. Samples were allocated to the experimental group A (brain gym exercise) and control group B (conventional therapy) based on the convenient sampling methods, the researcher obtained informed consent from the ADHD children with parents and teacher for the intervention and to use data for assessment and to measure the outcome of the treatment.

The mean age of experimental group 1 and control group 2 was 9.8 and 7.6 respectively. Children with ADHD inattention in experimental and control group were screened using Vanderbilt ADHD diagnostic teacher rating scale. Academic performance rating scale were used to assess the academic performance of samples. Group A received brain gym exercise and conventional therapy, Group B received conventional therapy alone. Each group received their respective intervention for eight weeks, five sessions per week, and one session per day. After the intervention, the post- test was conducted by using academic performance rating scale (APRS).

The paired 't' test was used to compare the score of the control and experimental group' pre-test and post-test, while the unpaired 't' test was used to compare the pre- test values

of the control and experimental group, as well as the post-test values of the control and experimental groups. The data was analysed using Graph Pad.

Table -1 and Graph -1 show the pre-test academic performance of the control and experimental groups. The mean values are 56.6 and 61.6. It is not statistically significant, as indicated by the values of 't' and 'p', which are 2.653 and 4.330, respectively. It shows that the control and experimental groups are same before intervention.

A comparison of the academic performance between the control groups pre-test and pos-test is shown in **Table- 2 and Graph-2**. Mean values are 59.6 and 58.6, with a 't' value of 2.136 and a 'p' value of 0.08, respectively, indicating that is not statistically significant.

A comparison of the academic performance between the experimental groups pre-test and post-test is shown in **Table 3 and Graph 3**, 61.6 and 52.5 are the mean values. It is extremely statistically significant since the 't' value is 12.198 and the 'p' value is < 0.0001. Thus, the brain gym exercises are effective in improving academic performance of ADHD Children.

This finding is supported by Darryn M *et al* **[13]**, through this study, increased students learning concentration through brain gym exercise movement. Asmita *et al*., **[14]** Brain gym is reported as simple movements that can help to coordinate the body and brain improve concentration and memory in children. The brain gym activities such as double doodle, lazy 8, arm activation, alphabet 8 applied.

The comparison of academic performance between the control group post-test and the experimental group post-test in shown in **Table 4 and Graph 4**, 2.059 and 2.729 are the mean values. It is extremely statically significant since the 't' value is 7.061 and 'p' value is < 0.0001, respectively. Intervention based on brain gym exercise have significant effect on academic performance of children with inattention ADHD.

Table 5 shows the attention level of control group, mean values of pre test 23.13, post test 22.67, t value 2.43, P value P< 0.19, it indicates that there is no change in attention level of control group students. **Table 6** shows the attention level of experimental group, mean values of pre test 22.93 post test 15.60, t value12.47, P value P< 0.0001, it indicates that there is no change in attention level of control group. These findings suggests that there is a significant improvement in attention after providing brain gym exercises along with conventional therapies.

With these findings and above discussion, the researcher accepts alternative hypothesis and reject null hypothesis. So, the results shows that Brain gym exercise is effective to

improve academic performance in children with inattention ADHD.

CONCLUSION

From this study, it is concluded that there is significant improvement in academic performance in children with ADHD after brain gym exercises moreover brain gym exercises are high impact on improving attention of Children with ADHD

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