Original article:

Effectiveness of brain gym activity on quality of life in autism spectrum disorder

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ABSTRACT:

Background: Children with Autism Spectrum Disorder (ASD) experience problems such as repetitive, jerky, purposeful movements, communication troubles and perception difficulty. Brain Gym improves academic skills, listening and thinking skills, or learning disability deficits. The Brain gym program helps the children to master the skills and mechanics of learning. It is also a stress free way of putting series of movements in such a way that it integrates learning into physiology. It boosts the child's self-esteem by learning to do self-mastery of skills. Thus ,this study was done to check the effectiveness of Brain Gym Activity on Quality of life in children with Autism Spectrum Disorder (ASD).

Objective: To find out the effectiveness of Brain Gym Activity on Quality of life in Autism Spectrum Disorder

Methodology:

15 participants with age 7-17 yrs for study with mild autism on childhood autism rating scale (CARS) were recruited for the study. Brain Gym Activity protocol was given for 12weeks period. Pre and post intervention values were measured for Pediatric Health related Quality of life questionnaire

Result: Comparison between pre and post intervention Pediatric Health related Quality of life scale shows highly significant result ($p < 0.001$).The data analysis shows that there was marked reduction in the score of Pediatric Health related Quality of Life (HRPQOL) in the 15 participants of the study. Also this shows that there is marked increase in Quality of life.

Conclusion: Improvement in quality of life, in children with autism spectrumdisorderwhentreated with Brain Gym Activity. Disorder.

Key words: Autism SpectrumDisorder (ASD), Brain Gym Activity, Quality of Life.

INTRODUCTION

"IF THEY CAN'T LEARN THE WAY WE TEACH; WE TEACH THE WAY THEY LEARN"

Autism is a complex neurobehavioral condition that includes impairments in social interaction, developmental language and communication skills combined with rigid, repetitive behaviors. Because of the variety of symptoms, this condition is now called autism spectrum disorder (ASD). Children with autism have difficulty communicating. As they have problem with understanding what other people think and experience, it is very tough for them to convey themselves either with words or through gestures, facial expressions, and touch [1].

Children with autism are not always involved in play with children of the similar age but even if they are, they generally have difficulties in making and

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keeping friends [2]. Apart from that autistic children often have difficulties with attention, listening to the teacher, fidgeting, problem solving, focus, following directions which may hamper their academic growth [3].

The rate of occurrence is 5 cases per 10,000 children. Prenatal factors like maternal bleeding after the first trimester, meconium in the amniotic fluid, respiratory distress syndrome, neonatal anemia are found to be causative factor in autistic disorder. Neuroanatomical causes such as brain enlargement, temporal lobe damage, and decrease in cerebellar purkinje cell are found to be contributing for autistic disorder [4].

Restricted repetitive behaviors (RRB) and stereotypic behaviors (SB) are among the key symptoms of autism. ASDs ranging have shown poor upper limb coordination during visuomotor and manual dexterity tasks and poor lower-limb coordination during tasks requiring balance, agility, and speed [5]. These difficulties can be overcome by the use of educational kinesiology which is commonly called as Brain Gym.

Brain Gym is an intervention planned by educators and reading experts, Mr. Paul and Mrs. Gail Dennison, in the 1970s to improve various outcomes including attention, memory and academic skills. Brain Gym involves 26 easy movements that are thought to boost academic and behavioral performance by stimulating both hemispheres of the brain through neurological repatterning to boost whole-brain learning.

Brain Gym is implemented in children with developmental disabilities like Attention Deficit Disorder (ADD), Attention Deficit Hyperactive Disorder (ADHD), Dyspraxia, Dyslexia, and Autism Spectrum Disorder. Areas which have shown drastic improvements are concentration and focus, Memory, Academics-reading, writing, math, test taking, Physical coordination, Relationships, Self-responsibility, Organizational skills and Attitude [6].

The chief goals of treatment are to optimize the child's ultimate functional independence and Quality of Life (QOL) by minimalizing the principal features of disorder, facilitating development and learning, encouraging socialization and educating parents [7].

According to World Health Organization (WHO) Quality of Life can be defined as "individual's perception of their position in life in the context of the culture and value systems in which they live in relation to their goals, expectations standards and concern" [8]. The scale used for assessment of Quality of Life is Pediatric Health-related Quality of Life. This scale has been selected for the assessment as it covers the physical, social, emotional and academic aspects of children with Autism Spectrum Disorder [9].

NEED FOR THE STUDY:

Children with Autism Spectrum Disorder (ASD) experience problems such as repetitive, jerky, purposeful movements, communication troubles and perception difficulty. Brain Gym improves academic skills, listening and thinking skills, or learning disability deficits. The Brain gym program helps the children to master the skills and mechanics of learning.

AIMS & OBJECTIVE

AIM: To find out the effectiveness of Brain Gym Activity on Quality of life in Autism Spectrum Disorder.

OBJECTIVES:

1. To assess Quality of life in Autism Spectrum Disorder.
2. To find out the effectiveness of Brain Gym Activity on

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Quality of life in Autism Spectrum Disorder.

HYPOTHESES

Null Hypothesis (H0): There was no significant difference on effectiveness of Brain Gym Activity on Quality of life in Autism Spectrum Disorder (ASD).

Alternative Hypothesis (H1): There was a significant difference on effectiveness of Brain Gym Activity on Quality of life in Autism Spectrum Disorder (ASD).

METHODOLOGY

15 participants with age 7-17 yrs for study with mild autism on childhood autism rating scale (CARS) were recruited for the study. Brain Gym Activity protocol was given for 12weeks period. Pre and post intervention values were measured for Pediatric Health related Quality of life questionnaire

SELECTION CRITERIA:

Inclusion Criteria:

- Participants in the age group of 6-16 years
- Boys and girls
- Children with mild autism (according to CARS Scale)
- Able to follow simple verbal commands

Exclusion criteria:

-Severe and moderate autism (according to CARS Scale)

- Auditory and visual problem
- Autism with mental retardation

-Children with physical disability

- Known case of any cardiorespiratory problems

OUTCOME MEASURES:

Dependentvariable-

Pediatric Health-related quality of life questionnaire (HRQOL)

Independentvariable-

Childhood Autism Rating Scale(CARS) score

PROCEDURE

All the participants from Aarambh Centre for Autism and Slow learners were screened according to inclusion and exclusion criteria. Parents were briefed about the study and an informed written consent was obtained from the parents. Assessment was done byPediatric Health related Quality of life Scale. Assessment was done twice before and after the intervention to observe the Quality of Life.

DATA ANALYSIS AND RESULT

In the study, the total number of participants selected were fifteen (n=15). Mean and S.D were calculated by using the data recorded during the study and using "software Instant graph pad", Student unpaired "t" test was used to obtain result.

Table no.1.Total no. of participants

AGE	MALE	FEMALE	TOTAL
<10	2	2	4
10-15	5	4	9
>15	2	0	2
TOTAL	9	6	15

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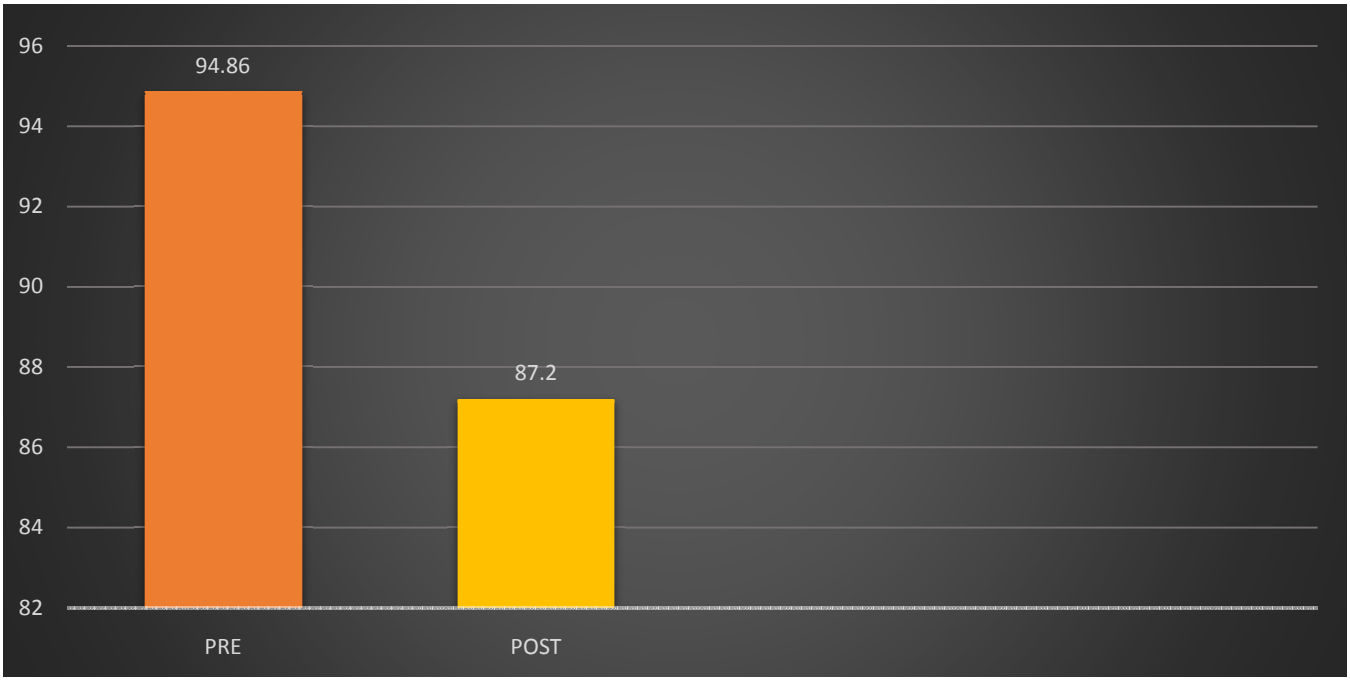
Table no.2.mean value

PRE MEAN +- SD	POST MEAN +- SD	UNPAIRED 't' TEST VALUE	'p' VALUE & SIGNIFICANCE
94.86 +- 9.24	87.2 +- 7.966	3.44	P < 0.001 , Highly significant

Graph no.1.Comparision of Pre and Post intervention values of Health related Quality of Life Scale



By applying student's unpaired 't' test, there is a highly significant decrease in the averageintervention value from pre to post Brain Gym Activity.

RESULTS:

The data analysis shows that after the Brain Gym Activity intervention there was marked reduction in the score of Pediatric Health related Quality of Life score (HRQOL) in the 15 participants of the study. According to the scoring of HRQOL scale, higher score of the scale indicates decreased or affected quality of life and lesser the score indicates better quality of life.Thus, according to the result of post intervention score, there is marked increase in Quality of life.

DISCUSSION

The present study "Effectiveness of Brain Gym Activity on quality of life in Autism Spectrum Disorder" was aimed to see how the Brain Gym Activity helps in improving quality of life in children with autism spectrum disorder. Aarambh Centre for autism and slow learners was chosen for the study of twelve weeks. The results of the study found significant difference in the pre intervention reading that was taken on the first day of the intervention and

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in 12th week in Health related Pediatric quality of life questionnaire. Thus, these strategies can be applied on a regular basis for helping such autistic children to overcome their behavior issues and to cope up effectively with the environment.Brain Gym Activity enhances the ability to coordinate one side of the brain with theother, especially in the visual, auditory and kinesthetic midfield, the area

where the two sides overlap.

Brain Gym activates the brain to balance stress around specific memories, situations, people, place and skills.It stimulates the reflex to act without thinking under stress. The Brain Gym Activity protocol enhances academic and behavioral performance by activating both hemispheres of the brain through neurological re-patterning to promote whole brain learning.

According to a study conducted by Jennifer Wimpy,Theteacher perception was that Brain Gym had a positive effect on all behavior variables.The results of this study may be used to provide information for administrators,educators, and parents who are seeking additional effective classroom managementstrategies and enhanced focus skills for students[10.]

A study done by Rehab H on gymnasts shows that brain gym program was given for 8 weeks resulted in an increase in Standing Stork Test,dynamic balance and Performance level of Manipulating Skills. These results have to be taken into account by coaches in order to better understand and applicate of brain gym concepts for technical effects of training[11.] It can be said that Brain gym activity also can be used in normal individuals for achieving various goals.

The study done shows positive effects on the behavior of these children especially in helping in improving restlessness, fidgety, temper tantrum and inattentive behaviors. Thus, Brain Gym Activity improves quality of life for children through its holistic approach and is widely used because of its ability to establish calm and gentle behavior.

CONCLUSION

From the above study it can be concluded that Brain Gym Activity is effective in improving the Quality of life in children with Autism Spectrum Disorder.

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