International Journal of Physical Education and Applied Exercise Sciences
ISSN:2394-9953
Volume 5, Number 1, February 2019

Effect of Physical Activity on Cognitive Development of Autistic Children

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ABSTRACT

The purpose of the study is to find out the Effect of Physical activity on Cognitive Development of Autistic Children of Roshni Ramakrishna Ashrama, Gwalior (M.P.). Five (N=5) subject were selected for the purpose of present study (mix group, boys= 03 & girls=02), age ranged from nine (9) to fifteen (15) years, according to Ashrama record, walking, carrying, balancing, cleaning, engaging in novel play, pushing, pulling, rotation, bending, and locomotion, and recreational activities are consider as Physical Activity to measure the Cognitive Development through Trail Making Test (TMT) Parts- A & B (consists 25 circle, A=number 1 – 25, B= both numbers & letters 1 – 13, A – L), before and after the Trail Making Test. In order to find out the effect of physical activity on Cognitive Development of autistic children, pre-test and post-test data was collected. Comparison was done by the means of paired't'-test. Significance difference was found at .05 level of significance.

Keywords: Trail Making Test (TMT), Cognitive Development, Physical Activity, Autistic Children.

Introduction

Autism is a disorder that is associated with deficiencies in three related domains. The first is language and communication. To be classified as autistic there must be a delay during the developmental period in the acquisition of language. If the individual exhibited no delay but shows other deficiencies associated with autism, then the individual is typically classified as having Asperser syndrome especially when those other conditions are mild. A severely autistic individual will never acquire language. Such individuals are typically not able to function in society independently and eventually require Institutionalization of one sort or another. More mild autism is typically associated with eventual language acquisition, but typically the individual shows clear deficiencies in the pragmatic or social use of language. Back and forth conversation is difficult and the individual will frequently discuss one or two topics of interest in an obsessive fashion. There are also a range of other related problems concerning various issues including that facial

expression and gestures frequently do not match what is being said. The second related domain is social interaction. Not surprisingly, given the deficiencies in pragmatic language skills, even high functioning autistic individuals typically find social interaction difficult. In addition, there are also a number of other aspects of the disorder that make social interaction difficult. First, autistic individuals have difficulty making appropriate eye contact during social interaction. Second, there is typically a deficiency in interpreting subtle social cues such as smiles, winks, and grimaces. Third, autistic individuals frequently exhibit what is referred to as mind blindness, i.e., they lack a conceptual understanding of what other individuals are thinking. This last characteristic can lead an autistic individual to make unintentional comments that the listener finds insulting. The final major way in which autistic individuals show deficiencies is in terms of repetitive behaviours and obsessive interests. This set of deficiencies takes a number of different forms. One specific way this deficiency manifests itself is in terms of odd repetitive motions such as flapping arms or walking on toes. Another is in terms of a desire for consistency or sameness of everyday routines. For example, an autistic child may demand that he or she leave for school at exactly the same time every day and that exactly the same route be taken, where any deviation concerning either of these dimensions can cause the child to become extremely agitated. The last way this deficiency is manifested is in terms of obsessive interests. For example, an autistic child may become obsessed with a narrow interest such as vacuum cleaners or train schedules or wasps and want to learn everything he or she can about the topics.

From the early 1900s, autism referred to range psychological conditions. But where the term did comes from. The word "autism" which has been used for about 100s year, comes from the Greek word "autos" meaning "self". The term describes condition in which a person is removed from social interaction-hence an isolated self. Eugen Bleuler, a Swiss psychologist, was the first person to use the term. He started using it around 1911 to refer to one group of symptoms of schizophrenia. In the year 1940s, researcher in the United State began to use the term "autism" to describe children with emotional or social problems.

Autism and schizophrenia remains linked in many researcher minds until the 1960s. It was only then that professionals began to have separate understanding to autism in children.

From the 1960s through the 1970s, research into treatments for autism focused on medication such as LSD, electric shock, and behaviour change techniques. During the 1980s and 1900s use of high controlled learning environments emerged as the primary treatments for many form of autism and related condition.

Objective

The purpose of the study was to compare Cognitive Development of Autistic

Children before and after six (6) week physical training activity.

Methodology

Selection of Subjects

For the purpose of the study Five (N=5) subject (mix group, boys= 03 & girls=02), Autistic Children of Roshni Ramakrishna Ashrama, Gwalior (M.P.), were selected according to Ashrama record with age ranged from nine (9) to fifteen (15) years,

Selection of Variable

For the purpose of the study, Cognitive development was selected as a dependent variable which was measured with a valid & reliable test that TMT.

Method and Tools

Subjects were made aware of the purpose of the study and also about test and procedure to perform Trail Making Test (TMT). The Pre-test & Post-test data was collected from the selected Autistic Children of Roshni Ramakrishna Ashrama, Gwalior (M.P.). The Pre-test data was collected before engaged them in any physical activity and Post-test data was collected after the six (6) week physical activity at Roshni Ramakrishna Ashrama, Gwalior (M.P.). The tool & equipment's which was used during the data collection is Trail Making Trail (TMT) parts A & B, Stop watch, Pencil & Paper etc. Total duration of the training was six (6) week and training was given in every alternate days (three days in a week), duration of class is 45 minutes and three minutes recovery period in between the activities. The cognitive development measurement was done on the basis of time record in seconds to complete the Trail Making Test (TMT) Parts- A & B (consists 25 circle, A=number 1 – 25, B= both numbers & letters 1 – 13, A – L).

The overall score of TMT was taken as the sum of time in seconds of part A & B.

Statistical Technique

The data was analysed by employing paired t-test at .05 level of Significance. The SPSS statistical was used for calculation.

RESULTS

The data was collected and analysed in order to draw a conclusion or to compare the pre and post status of the Cognitive Development of autistic children of Roshni Ramakrishna Ashrama, Gwalior (M.P.). The findings of descriptive statistical values are presented in the Table underneath.

Table 1:

Paired sample statistics for Cognitive Development

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	cognitive development pre-test	3.164	5	1.023	.458
	cognitive development post-test	2.780	5	.682	.305

Table 1 shows the value of mean, SD and standard error of the mean for the data on cognitive development in pre and post-testing as 3.164±1.023 & 2.78±0.682 respectively.

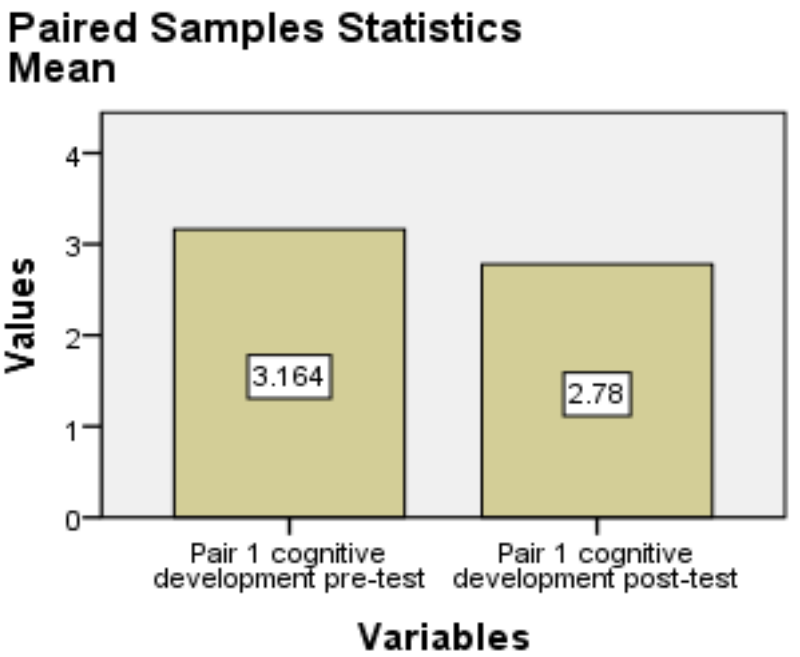

Fig.1. Comparison of Mean Result in Pre-test and Post-test Cognitive Development of Autistic Children.

The comparison of mean difference of pre-test cognitive development and post-test cognitive development of autistic children of Roshni Ramakrishna Ashrama, Gwalior, (M.P.).

Table 2.

Paired T-test between Pre and Post cognitive development.

Paired Samples Test							
		Paired Differences					
Mean		Std. Deviation	Std. Error Mean		t	df	Sig. (2-tailed)
Pair 1	Cognitive Development pre & post-test	.384	.418	.187	2.056	4	.109

Table 2 shows that obtained p-value (.109) is more than 0.05 thus indicating that there is no significance difference between Pre-test and Post-test cognitive development.

Conclusion

The result of the study clearly conclude that there is no significant difference in pre and post test score. Comparative graph shows that there is improvement in cognitive development but they are not significant, so the researcher may conclude training was effective but requires to include some more ingredients and duration can also be increase to make the training more affective.

Discussion

It has been noticed in the statistical analyses that there is no significant difference in pre and post-test of Trail Making Test of autistic children of Roshni Ramakrishna Ashrama, Gwalior, M.P., but in the graph it is showed that there is little difference in Mean value of pre and post-test (TMT), that means the physical training/activity period is need be to extended from 6 week to 8 -10 week and also increased the frequency (numbers of days per week) of the training, so that the Trail Making Test will be more effective to compare the Cognitive Development of autistic children of Roshni Ramakrishna Ashrama, Gwalior, M.P.

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