



Addressing ADHD through Physical Activity: An Analysis

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Abstract

This is an experimental study, focusing on how physical activity influences the condition of children with ADHD. It focuses on addressing/treating individuals diagnosed with ADHD through physical activity. Attention Deficit Hyperactivity Disorder (ADHD) is one of the most prevalent childhood disorders. A recent study revealed the overall prevalence of ADHD to be 8.8% among school-going children in India, pointing out the importance of this study. The purpose of the study was to find out whether regular physical activity could be used in treating ADHD in school going students. The study mainly focuses on the attention of children with ADHD. Students with ADHD were diagnosed using Conner's 3 self-report and Conner's 3 parent short assessment methods. 17 students were taken as subjects for this study according to the response collected. For testing the attention of these students, the researcher uses the six-letter cancellation test. Then the group is divided into two groups, the control group, and the experimental group. The experimental group is given 40 minutes of physical activity regularly for four weeks. After training, the researcher again conducts the attention-test for all. The responses are collected and recorded for statistical analysis.

Keywords: ADHD, Physical Activity.

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Introduction

Human is a social animal “according to Aristotle. One cannot live alone. In our whole life we come across millions of people. We meet many in our day to day life. Each person we meet will have his or her unique set of behavioural patterns. Which is also known as one’s personality. Personality is the resultant of a set of behaviours acted upon the cognitive and emotional status of an individual, it varies from individual to individual with regard to his or her biological and environmental factors. The study of behaviour in scientific ways is known as psychology.

The field of psychology has achieved a lot, since its establishment in 1879, by Wilhelm Wundt. The advancement of the field has led us to the discovery of many previously unknown conditions that one suffers, even if he or she may look normal or manifest any visible abnormality. Conditions that make one’s life difficult and makes him or her to act weird. ADHD (Attention Deficit Hyperactivity Disorder) is one such condition which is discussed in this study.

Attention Deficit Hyperactivity Disorder (ADHD)

It is a condition which is caused due to lack of Trans – colossal motor fibre in the brain. The major

symptoms of ADHD is a persistent pattern of inattention and or hyperactivity-impulsivity that interferes with functioning and development according to DSM-5. Inattention here refers to the lack of continuity or consistency in doing tasks i.e. wandering off task, having difficulty in maintaining focus and becoming disorganised. Hyperactivity refers to excessive motor activity when it is not required, excessive fidgeting, tapping, or talkativeness.

ADHD begins in childhood, recognizing and treating will help in building a good personality of the individual. It is one of the most prevalent childhood disorders. According to a recent study it was revealed that the overall prevalence of ADHD to be 8.8% among school going children in India (Catherine T G and colleagues in May 2019). Which points out why this study has to be done. Many of us may have suffered this but we were illiterate enough to ignore it or notice it. According to DSM-5 about 5% of children in the world suffer from ADHD. Children with ADHD exhibit catecholaminodeficiencies which can be detected by biochemical, physical and cognitive tests. According to neurobiological studies there is a catecholamine dysfunction in the prefrontal cortex and striatal areas (Soura et al. 2001).

ADHD is also one of the reasons for an individual to do poorly in academics, as a child getting rejected and also performing poorly in school. As an adult there is a higher probability of unemployment and interpersonal conflicts. Children with ADHD show more

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chances of developing conduct disorder in adolescence relatively than the children without ADHD. In adulthood they may have antisocial behavior which may lead to substance abuse disorder. They may have personality disorders if not treated from the right age. Traffic accidents and traffic rule violations are more frequent in drivers with ADHD.

Physical Activity

WHO defines "physical activity as any bodily movement produced by skeletal muscles that require energy expenditure the term "physical activity" should not be mistaken with "exercise". Exercise is a subcategory of physical activity that is planned, structured, repetitive, and purposeful in the sense that the improvement or maintenance of one or more components of physical fitness is the objective. Physical activity includes exercise as well as other activities which involve bodily movement and are done as part of playing, working, active transportation, house chores and recreational activities". Physical activity is the resultant of contraction of millions of muscle fibres together causing bodily movement. Muscular contractions take place by consuming energy stored in muscle fibres. Physical activity can be defined as a set of physical movement done to obtain some desired outcomes which may be for relaxation, pleasure, coordination, fitness etc. Physical activity can be classified into two mainly aerobic and anaerobic activities. These activities are classified based on energy expenditure i.e. from what source energy is taken, how it is converted and for how much duration it is used.

How to Treat

Methylphenidate (MTP) is the drug mostly used for treating this condition. It is a catecholamine (CA) stimulant. The duration of action of MTP is about 1 to 4 hours. Some of the studies supported that same level of improvement was observed in asymptomatic individuals after doing Physical Activity. Many findings proved the elevation of catecholamine in striatal areas of the brain (Hatlori et.al.1996, Meeusan et.al.1997; Mac Rae et.al.1987). Studies prove that exercise is an effective tranquilizer. Studies in adult indicate that 30 minutes of exercise reduces muscle tension by as much as does a dose of 400mg of meprobamate.

It is always better to do some physical activity rather than taking in drugs. ADHD is never completely curable but it can be treated and physical activity is one of the best ways. By engaging in regular Physical activity one can spend his/her excess of energy which helps him/her to be less impulsive or hyperactive. There are lots of benefits which one gets by doing physical activity regularly. He/she keeps away hyperkinetic diseases, avoid substance abuse, maintain a healthy body, mind and spirit etc. Doing regular physical activity like yoga or aerobic exercises can help increase his/her attention span i.e. being able to focus on a task longer without getting side-tracked. Doing regular acute

physical effort can improve cognitive abilities. (Tompersourski 2003; Brisswalter et. al. 2002) (Koehl et. 2008). Many articles support the fact that physical activity (PA) is good for mental health, cognition and emotion. However, limited research has explored PA as a means of managing behavioural symptoms and improving cognitive performance of children with attention deficit hyperactivity disorder (ADHD).

A study done on children with ADHD in which the subjects were asked to jog for 30 minutes regularly for 10-22 weeks proved that physical exertion substitutes the stimulant effect of medication. Only a limited number of studies have addressed the effects of physical activity on specific abnormalities in cognitive and behavioral dysfunctions in children and youth.

Methodology

The study was conducted on school going students as it was the correct age for identifying and treating ADHD. All the subjects were selected from Kendriya Vidyalaya Thrissur, Purnatukara, and the test was conducted with all the consent from the principal and the school authority also consent was taken from parents or guardians of the participants.

Selection of Subject

The study was conducted on children aged between 12 to 14 years of age as it is the right age to spot and treat ADHD. The researcher was allotted with standard IX for his study. Class IX was divided into four section i.e. A, B, C and D. Each section consisted of 48-50 students. A complete number of 198 students participated within the first round of research i.e. screening test for ADHD. A questionnaire was made by concerning Conner's 3 self-report short test for ADHD in adolescents, it specifically measured the hyperactivity and inattention in children. The responses are noted and recorded by the researcher. Now this data is statistically analysed and scores are obtained. From the score obtained 17 students were diagnosed with ADHD. These students were confirmed with ADHD by another screening test for ADHD i.e. Conner's 3 parent short test which was responded by parents. Now these subjects were divided into 2 groups:

- Control group (8 students)
- Experimental group (9 students)

Pre-Training Test Application

All selected subjects were asked to perform a six-letter cancellation test used to measure attention from an individual. The procedure is simple in the case of a six letter cancellation test, the subject must cancel the six letters of the table in one minute. The total score is obtained by subtracting the number of errors made from the total number of attempts made. The researcher collects the scores and records the data.

Test Procedure

Subjects are asked to do regular physical

activity for 40 minutes a day for 4 weeks. The 40 minutes of physical activity should be included in the subject's daily routine. The activity can be calisthenics, games, exercise, yoga, etc.

Application of Post-Training Test

After successfully completing the physical activity program for four weeks, the researcher asks his

subjects to repeat the six-letter test. The data obtained is collected and recorded by the researcher for an in-depth statistical analysis.

Analysis of Data and Result of the Study

Hypothesis

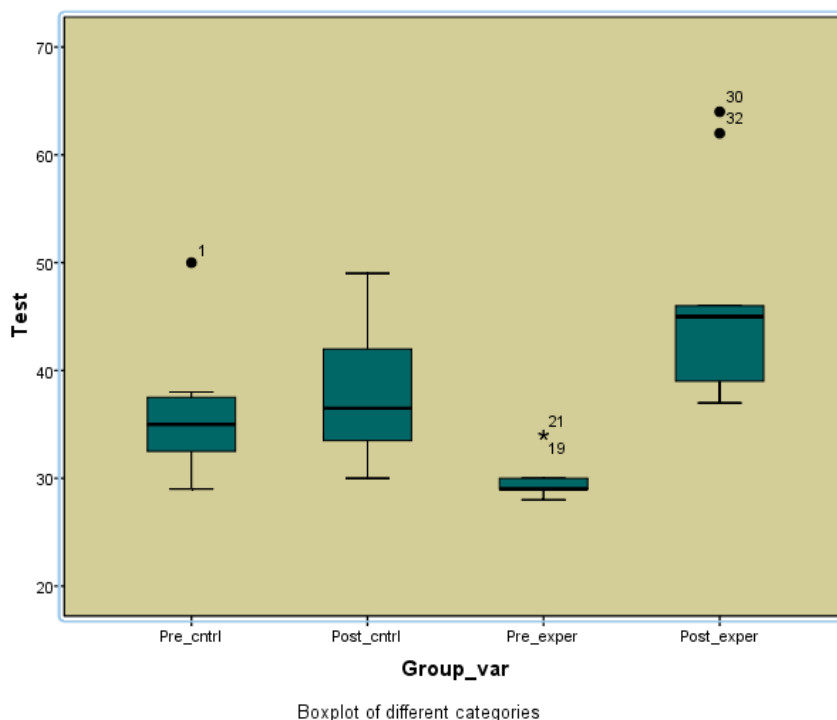
H₀: Means of all four groups are equal Vs H₁: Atleast mean of one group is different.

Table 1. ANOVA

Test	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1226.580	3	408.860	8.794	.000
Within Groups	1394.861	30	46.495		
Total	2621.441	33			

Table 1 shows the ANOVA table which compared pre-test and post-test for control group and experimental group for ADHD. Since the calculated value 8.794 is greater than the critical value it may be

concluded that there is a significant difference between pre-test and post-test for control group and experimental group.



Discussion of Findings

According to the findings the experimental group who underwent training showed more significant change in attention than compared to the control group. Based on the statistical analysis, it was nearly evident that doing physical activity regularly for a duration of time can improve attention in children with ADHD, therefore helping them to combat conditions of ADHD. Even though the results of individual varied from one another.

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