BODY COMPOSITION AND FLEXIBILITY VALUES OF INTELLECTUALLY DISABLED CHILDREN: EFFECTS OF PHYSICAL ACTIVITY PROGRAMME

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ABSTRACT

Purpose. The aim of the present study is to evaluate the effects of structured physical fitness plan on body composition and flexibility values of intellectually disabled children of experimental and control group. **Methods.** An experimental study has been designed to see the effects of structured physical fitness plan on body composition and flexibility values of intellectually disabled children. The experimental group was undergo structured physical fitness plan for Twelve weeks whereas the control group was not exposed to any treatment. To determine the effects of structured physical fitness plan, 40 intellectual disabled boys from Government Rehabilitation Institute of Intellectual Disabilities (GRIID) Chandigarh were selected as subjects. The subjects were assigned randomly to experimental group (20) and control group (20). The age of subjects ranged between 13 to 17 years. The Brockport Physical Fitness Test Manual was used for the purpose of measuring the score of body composition and flexibility values of subjects for the present study. Sum of triceps and calf, Body mass index and Back-saver sit-and-reach test were used. **Results.** The results of the study illustrate that there was a improvement in the body composition (Sum of triceps and calf) of experimental group ($t=6.08, p<.000$) as the mean score of the post and pre-test differ significantly and significant differences were reported in the means score of pre and post-test of the control group ($t=4.12, p<.001$). The results of body composition (body mass index) of experimental group ($t=2.67, p<.015$) found significantly different and whereas control group ($t=1.97, p<.064$) reported insignificantly different. Flexibility reported significantly different in experimental ($t=8.80, p<.000$) and insignificantly different in control group ($t=.66, p<.516$).

Conclusion. The study concluded that improvement of body composition and flexibility values of Intellectually Disabled Children can be achieved through the implementation of Structured Physical Fitness Plan.

Keywords: Intellectual disabled children, body composition and flexibility.

INTRODUCTION

In modern societies, rapid economic development and the advancement of automation technologies have made our daily activities incomparably easier, while driving people to adopt westernized diet patterns. These changes have led to many cases of over nutrition and a wide range of diseases caused by insufficient physical activity. As we all know that physical activity and regular exercise is necessary for all humans to enjoy healthy living. A healthy body weight, digestion and sleep are positive indicators of regular physical activity for general population.

Basically the body composition describes the percentage of actual fat in human body. Measurement of fat in body is much more important than body weight measurement, as excess or less than required fat could harm the physical fitness level whereas body weight could not effect directly. It means that the percentage of body fat effects directly rather than body weight.

Misconception of dieting is spreading rapidly in our society. The word 'Diet' which is associated with gain or loss of body weight can also refers to proper intake of required nutrients. In actual proper diet is a balanced intake of carbohydrates, proteins and fats including vitamins and minerals.

As Flexibility is one of the most important components of sports training, it plays an important role in physical fitness of humans. Flexibility can be defined as "the ability to execute movements with greater amplitude or range (Singh, 1991).

The physical appearance of most students with mental retardation does not differ from that of their peers, but some of their physical abilities e.g. gross and fine motor co-ordination, mobility etc. are deficient. Such students appear physically different from other students. Usually, their retardation is a product of genetic rather than environmental factors. Nearly all of the genetic syndromes that result in mental retardation leave the individual with physical symptoms. These have Down syndrome which usually have a rounder face and shorter limbs than their age mates. Microcephaly which means "smallness of the head" can also be a physical sign of mental retardation. Finally, if brain or spinal tissue becomes involved, mental retardation can result. Such students have limited physical mobility. Many cannot walk and some cannot stand or sit-up without support. They are slow to perform physical movements (Singh, 2012).

Exceptional students, their abilities and characteristics are different from group norms. Exceptional students are different from normal ones in order to be acquired with education; school's in vitiations are

consistent with their needs and are acquired with special education services according to their abilities. Early scholars tried to return the exceptional students to normal and natural life as much as possible and create the dignity and self- esteem they lack. Different classifications are made to exceptional students. In one of these classifications, exceptional students include learning disabilities, attention deficit hyperactivity disorder, emotional or behavioral disorder, mental retardation, communication disorder, severe and multiple disabilities, isolation, traumatic and acquired brain damage, hearing and vision failure, physical and health disabilities, smartness, creativity and talent (Ashutosh, 2015).

METHODS AND PROCEDURE

An experimental study has been designed to see the effects of structured physical fitness plan on body composition and flexibility values of intellectually disabled children. The experimental group was undergo physical activity programme for Twelve weeks whereas the control group was not exposed to any treatment. To determine the effects of physical activity programme, 40 intellectual disabled boys from Government Rehabilitation Institute of Intellectual Disabilities (GRIID) Chandigarh were selected as subjects. The subjects were assigned randomly to experimental group (20) and control group (20). The age of subjects ranged between 13 to 17 years.

Sum of triceps and calf, Body mass index and Back-saver sit-and-reach test of Brockport Physical Fitness Test Manual (Winnick and Short 2014) was used for the purpose of measuring the scores of body composition and flexibility (musculoskeletal functioning) of subjects for the present study.

The test was administrated as per prescribed instructions in manual of the test. The necessary data was collected from each experimental and control group which was tested for body composition and flexibility (musculoskeletal functioning) before and after the training programme. The data was collected during the school timings in coordination with concerned school teachers.

To examine the effects of structured physical fitness plan on body composition and flexibility values of intellectually disabled children, the collected data of experimental and control group were compared by applying statistical technique namely ‘t’ test. The level of significance will be set at .05 level.

RESULTS AND DISCUSSION

TABLE – 1.1

SIGNIFICANCE OF DIFFERENCES OF MEAN BETWEEN PRE-TEST AND POST-TEST FOR THE BODY COMPOSITION (SUM OF TRICEPS AND CALF) OF EXPERIMENTAL AND CONTROL GROUP

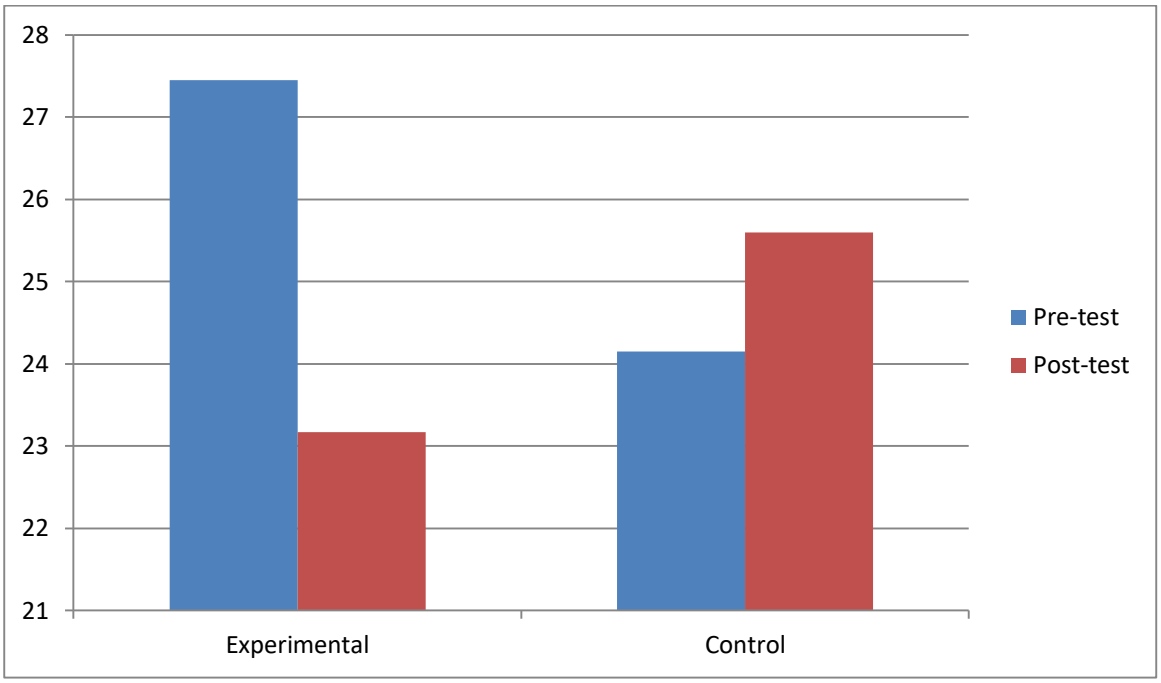
Groups	Pre Test		Post Test		Standard error of differences	t-ratio	Sig.
	Mean	SD	Mean	SD			
Experimental	27.45	6.41	23.17	6.08	.70	6.08*	.000
Control	24.15	4.75	25.60	4.96	.35	4.12*	.001

* Significant at .05 level df =19

It is evident from Table -1.1 that significant differences found in mean of pre-test and post-test for the body composition (sum of triceps and calf) of experimental and control group. The results of the study shows the decreased mean after the treatment implemented on subjects which was measured by sum of triceps and calf measurement as significant differences were reported between the pre and post test means of the experimental group for the variable of body composition ($t=6.08, p<.000$). Whereas the results of control group also reported significantly different, as mean increased of post test which was measured after 12 weeks of treatment ($t=4.12, p<.001$). Overall results show that the body fat was decreased in experimental group and increased in control group.

FIGURE-1.1

COMPARISON OF MEANS BETWEEN PRE AND POST TEST FOR THE BODY COMPOSITION (SUM OF TRICEPS AND CALF) OF EXPERIMENTAL AND CONTROL GROUP



DISCUSSION OF FINDINGS

In this variable, the analysis of data show the positive effect by decreasing fat content of body in experimental group whereas fat content of body was increased in control group which means implementation of physical activity programme benefited the experimental group. The results of previous studies e.g. **Emerson (2005)** studies the underweight, obesity and exercise among adults with intellectual disabilities. Emerson concluded in his study that insufficient physical exercise can lead to high risk of health and also recommended that the physical exercise for intellectually disabled people can only improve the health and body composition as well. In other research **Hinckson, Dickinson, Water, Sands and Penman (2013)** explores the effects of Physical exercise, eating habits and body composition of kids with intellectual disability. But they didn't get any satisfactory results in weight lose whereas improvement found in results of walk test. The findings of this study are in line with reported studies shows difference in their results where body composition or fat content was effected by the implementation of Physical Activity Programme on intellectually disabled population.

TABLE – 1.2

SIGNIFICANCE OF DIFFERENCES OF MEAN BETWEEN PRE-TEST AND POST-TEST FOR THE BODY COMPOSITION (BODY MASS INDEX) OF EXPERIMENTAL AND CONTROL GROUP

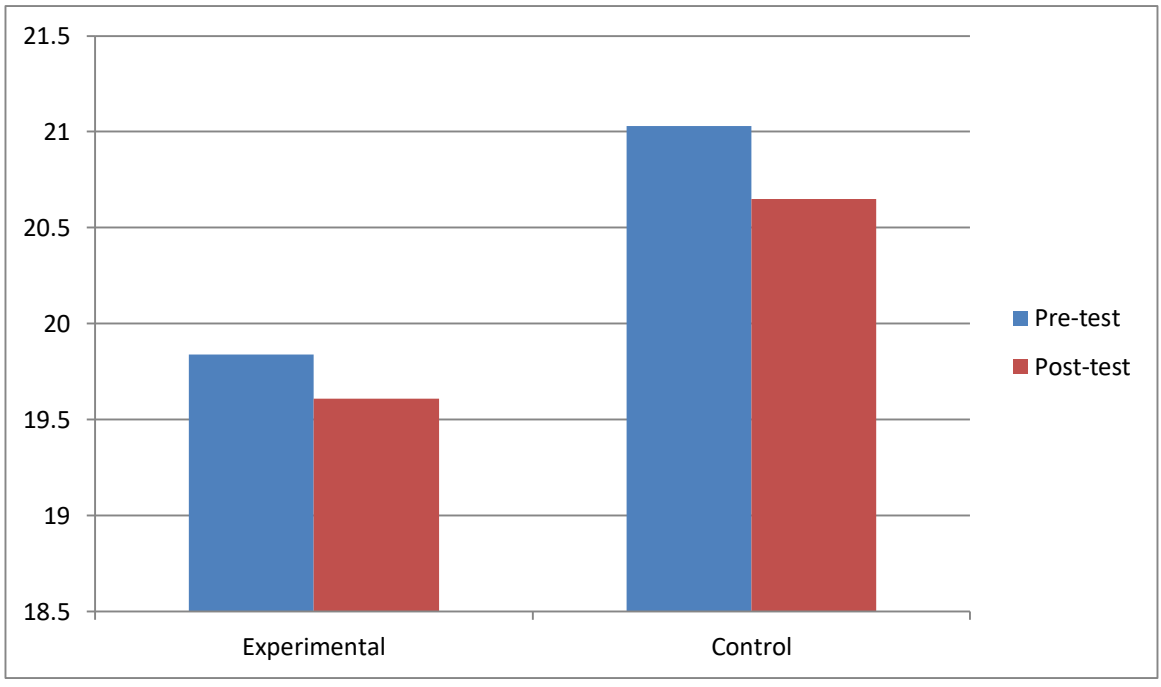
Groups	Pre Test		Post Test		Standard error of differences	t-ratio	Sig.
	Mean	SD	Mean	SD			
Experimental	19.84	3.76	19.61	3.61	.09	2.67*	.015
Control	21.03	6.01	20.65	5.65	.19	1.97	.064

* Significant at .05 level df =19

Table-1.2 reveals the significant differences in mean of pre-test and post-test for the body composition (body mass index) of experimental group and insignificant differences in control group. The results of the study shows the decreased mean after the 12 week physical activity programme implemented on subjects which was calculated by height and weight, as significant differences were reported between the pre and post test means of the experimental group for the variable of body composition (t=2.67,p<.015). In control group also, the mean decreased after the 12 week physical activity programme implemented on subjects which was also calculated by height and weight but found insignificantly different (t=1.97,p<.064).

FIGURE- 1.2

COMPARISON OF MEANS BETWEEN PRE AND POST TEST FOR THE BODY COMPOSITION (BODY MASS INDEX) OF EXPERIMENTAL AND CONTROL GROUP



DISCUSSION OF FININGS

The results reported the significant difference in experimental group and insignificant difference in control group. In support of this, **Hinckson, Dickinson, Water, Sands and Penman (2013)** explores the Physical activity, eating habits and obesity in children with intellectual disability in which they didn't get any satisfactory response in the body composition of intellectually disabled children, whereas other variables of this study were improved by following physical activity. **Lloyd, Temple and Foley (2012)** identifies the International BMI comparison of people with intellectual disabilities participating in Special Olympics. This study proved the body mass index as a significant indicator of health. **Frey and Chow (2006)** purposely examine the relationship between BMI, physical fitness and motor skills in youth with mild intellectual disabilities. The study witness that the fitness level do not always dependent upon overweight. They concluded that that overweight was not having relation with aerobic fitness and muscular strength in individuals with disability. Body mass index did not impact other variables of fitness. The findings of this study are in line with reported studies shows difference in their results where body composition (BMI) was effected by the implementation of Physical Activity Programme on intellectually disabled population.

TABLE - 1.3

SIGNIFICANCE OF DIFFERENCES OF MEAN BETWEEN PRE-TEST AND POST-TEST FOR THE MUSCULOSKELETAL FUNCTIONING (BACK-SAVER SIT-AND-REACH) OF EXPERIMENTAL AND CONTROL GROUP

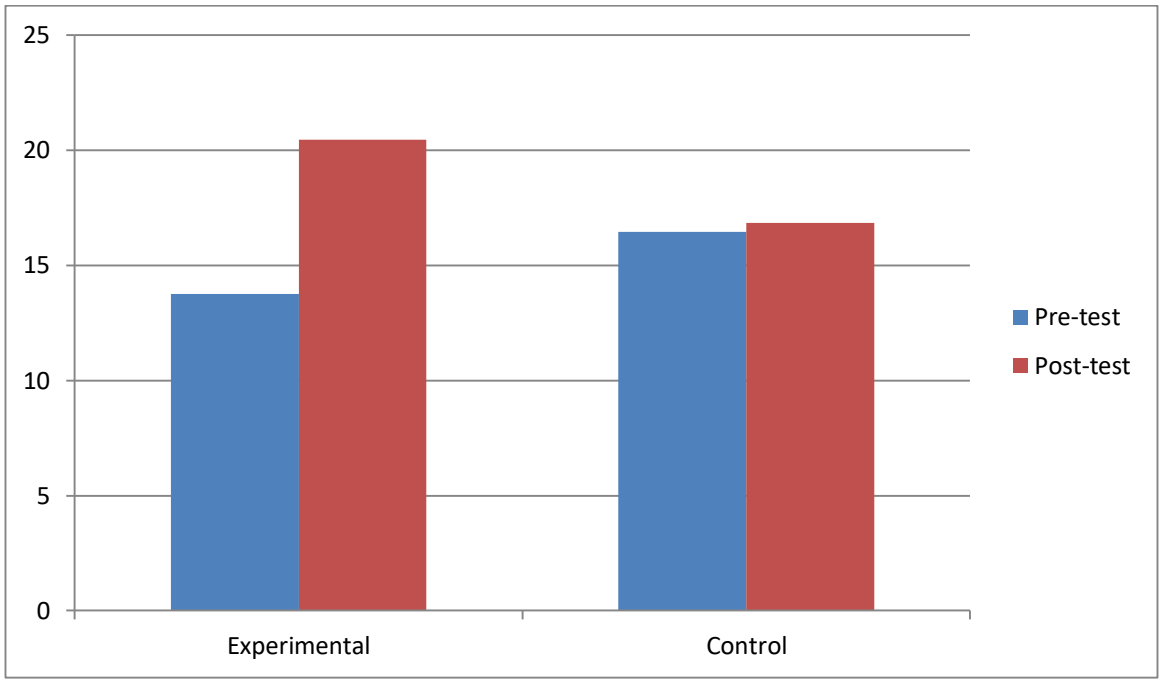
Groups	Pre Test		Post Test		Standard error of differences	t-ratio	Sig.
	Mean	SD	Mean	SD			
Experimental	13.75	4.98	20.45	3.93	.76	8.80*	.000
Control	16.45	3.75	16.85	2.76	.60	.66	.516

* Significant at .05 level df =19

It is evident from Table -1.3 that the results were significantly different in means of pre-test and post-test for the musculoskeletal functioning (back-saver sit-and-reach) of experimental and found insignificantly different in control group. The results of study shows that the musculoskeletal functioning which was tested by back-saver sit-and-reach test, had improved after the implementation of 12 week physical activity programme as significant differences were reported between the pre and post test means of the experimental group for the variable of musculoskeletal functioning ($t=8.80$, $p<.000$). Whereas pre and post test were found to be insignificantly different in the control group where the musculoskeletal functioning of this group had improved during the period of this experiment ($t=.66$, $p<.516$).

FIGURE- 1.3

COMPARISON OF MEANS BETWEEN PRE AND POST TEST FOR THE MUSCULOSKELETAL FUNCTIONING (BACK-SAVER SIT-AND-REACH) OF EXPERIMENTAL AND CONTROL GROUP



DISCUSSION OF FINDINGS

The results were significantly different of pre-test and post-test for the musculoskeletal functioning (back-saver sit-and-reach) of experimental group but insignificantly differences found in the control group. The related reviewed studies witness the present results for example **Asonitou, Mpampoulis, Irakleous-Paleologou, and Koutsouki (2018)** examined the effects of an adapted physical activity program on physical fitness of adults with intellectual disabilities. By implementing structured physical exercise program the muscle strength and endurance, flexibility, cardio respiratory endurance, speed and balance were found to be improved. Another study by **Golubovic, Maksimovic, Golubovic and Glumbic (2012)** determines the effects of exercise on physical fitness in children with intellectual disability. The researcher found improvement in all over physical fitness of same population which also covers the musculoskeletal functioning variable including muscular strength, muscular endurance and flexibility. One more study by **Dorsan, Koc, Kose, Bal and Caliskan (2014)** examines the effect of 12 weeks of dance education on the values of physical fitness in children with mental retarded. This study found that many variables of physical fitness can be improved by implementing 12 weeks of dance programme. These all studies are in-line with the findings of present study where musculoskeletal functioning was positively affected by the implementation of Physical Activity Programme on intellectually disabled population.

CONCLUSION

The study concluded that improvement of Body Composition and Flexibility of Intellectually Disabled Children can be improved through the implementation of Physical Activity Programme. It is recommended for special educators that the Physical Activity Training/Programme of Intellectually Disabled population should be implemented in school level.

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