Vol 6 Issue 5 June 2016

ISSN No : 2230-7850

International Multidisciplinary Research Journal

Indian Streams Research Journal

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RNI MAHMUL/2011/38595 **ISSN No.2230-7850**

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ISSN: 2230-7850 Impact Factor : 4.1625(UIF) Volume - 6 | Issue - 5 | June - 2016

Indian Streams Research Journal

EFFECT OF ADAPTED PHYSICAL ACTIVITIES ON SELECTED BIOMOTOR VARIABLES OF BOYS WITH INTELLECTUAL DISABILITY

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ABSTRACT:

The purpose of this study was to find out the effect of adapted physical activities on selected biomotor variables of boys with intellectual disability. For this study, 20 mild intellectually challenged boys were selected from Faculty of Disability Management and Special Education unit, Coimbatore, Tamil Nadu. Their age ranged from 8 to 15 years. The selected subjects were considered as two groups, 10subjects in each group. Group I was treated as experimental group namely Adapted physical activities group. These 10 subjects had under gone adapted physical activities designed by the researcher, five days a week for sixteen weeks. Group II was treated as control group. The control group did not participate in any specific training programme. The following variables were selected for the study such as biomotor variables namely speed and arm power. All subjects were tested prior to training after completion of eight weeks and after completion of sixteen weeks of training on the selected variables. To analyze the collected data investigator used One way Repeated Measures ANOVA was used to find out the significant difference among pre test, mid test and post test data. If obtained 'F' ratio is significant Newman Kuel's test was used. Analysis of covariance (ANCOVA) was applied to determine the significance of mean difference between the two groups. The Adapted physical activity group showed significant difference than the control group after sixteen weeks of adapted physical activities on speed and arm power of boys with intellectual disability.

KEYWORDS : Adapted physical activities, speed, arm power and intellectually challenged children.

INTRODUCTION:

Intellectual disability is a generalized disorder. It is characterized by significantly impaired cognitive functioning and deficits in two or more adaptive behaviours that onset before the age of 18. Generally such a person has an intelligence quotient (IQ) score of fewer than 70. Intellectual disability (ID), also called intellectual development disorder (IDD) or general learning disability (UK and Ireland), Auxter (1997) and formerly known as mental retardation (MR),(Dunn(1997), Carol 2004) is a generalized neuro developmental disorder characterized by significantly impaired intellectual and adaptive functioning.

The signs and symptoms of intellectual disability are all behavioural. Most people with intellectual disability do not look like they are afflicted with such, especially if the disability is caused by environmental factors such as malnutrition or lead poisoning. The so-called typical appearance ascribed to people with intellectual disability is only present in a minority of cases, all of which are syndromic.

The benefits of physical activity are universal for all children, including those with disability. The participation of children with disability in sports and adapted physical activities promotes inclusion, minimizes reconditioning and optimizes physical functioning and enhancing overall well-being. Despite these benefits, children with disability are more restricted in their participation, have lower levels of fitness and have higher levels of obesity than their peers without disability.

The goal to be achieved is the inclusion of all children with disability in appropriate activities. Physical activity, recreation, and sports participation for children with disability can provide practical suggestions to paediatric health care professionals for the promotion and participation of intellectually disabled children.

METHODOLOGY:

Selection of subjects:

For this study 20 mild category intellectually challenged boys with IQ Level 50 to 69 were selected by random sampling technique from Faculty of Disability Management and Special Education unit, Ramakrishna Mission Vivekananda University Middle School, Coimbatore, Tamil Nadu. The subject's age ranged from 8 to 15 years.

Selection of variables

Independent Variable

★ Adapted physical activities

Dependent Variables

Bio-motor Variables

★ Speed
★ Arm power

Selection of tests

As per the available literature, the following standardized tests were used to collect the relevant data on the selected variables.

CRITERION MEASURES

Table- I

S. No	Bio-motor Variables	Test	Unit of measurement
1.	Speed	30m fly start test	In seconds
2.	Arm power	Medicine ball throw test	In meters

EXPERIMENTAL DESIGN

To achieve the purpose of the present study, 20 mild intellectually challenged boys were selected from Faculty of Disability Management and Special Education unit, Coimbatore, Tamil Nadu. Their age ranged from 8 to 15 years. The selected subjects were considered as two groups, 10subjects in each group. Group I was treated as experimental group namely Adapted physical activities group. These 10 subjects had under gone adapted physical activities designed by the researcher, five days a week for sixteen weeks. Group II was treated as control group. The control group did not participate in any specific training programme. The following variables were selected for the study such as biomotor variables namely speed and arm power. All subjects were tested prior to training after completion of 8 weeks and after completion of sixteen weeks of training on the selected variables.

STATISTICAL TECHNIQUE

To analyze the collected data investigator used One way repeated measures ANOVA to find out the significant difference among pre, mid and post tests data. If obtained 'F' ratio is significant Newman Kuel's test was used. Analysis of covariance (ANCOVA) was applied to determine the significance of mean difference between the two groups. The level of confidence was fixed at 0.05.

LIST OF ADAPTED PHYSICAL ACTIVITIES

Circle kabaddi, Military relay, Man gun and bear, Find out the leader, Toe touching(30 seconds), Task relay, Snatch the handkerchief, Shifting the Indian club, Shifting the ring, The ups contest(Badminton), Target pass, Racket bounce, Target roll, 30-footline target, Driving the puck, Goal shooting(goal kick),

RESULTS & DISCUSSION:

Table-II

One Way Repeated Measures Anova On Selected Variables Of Pre, Mid And Post Tests Of Adapted Physical Activities Group And Control Group

Group	Variables	Sources of variance	Sum of Squares	df	Mean Squares	Obtained 'F' ratio
Adapted physical activities group	Speed	Between	53.65	2	26.83	5.77*
		Error	83.60	18	4.64	
	Arm power	Between	6.01	2	3.006	38.53*
		Error	1.40	18	0.08	
Control group	Speed	Between	0.06	2	0.03	0.05
		Error	10.62	18	0.59	
	Arm power	Between	0.17	2	0.08	1.73
		Error	0.87	18	0.05	

*Significant at 0.05 level. The table value required for significance at 0.05 level with df 2 and 18 is 3.55

The result of the Table-II shows that there is a significant difference among the means of three tests of adapted physical activities group in speed and arm power. And it reveals that there is no significant difference among the means of three tests of control group in speed and arm power. To find out which of the three paired means had a significant difference, the Newman Keuls post hoc test is applied and the results are stand presented in tables II and III.

Table –III

Newman Keuls Test For Differences Between Treatment Means Of Speed Of Adapted Physical Activities Group

Means		Ordered means			Range (r)	Critical Value
		Pre test	Mid test	Post test		
		12.08	11.21	8.91		
Pre test	12.08	-	0.87	3.17*	3	2.46
Mid test	11.21	-	-	2.3*	2	2.02
Post test	8.91	-	-	-	-	-

* Significant

Table – IV

Newman Keuls Test For Differences Between Treatment Means Of Arm Poewr Of Adapted Physicalactivities Group

Means		Ordered means			Range (r)	Critical Value
		Pre test	Mid test	Post test		
		2.28	2.95	3.37		
Pre test	2.28	-	0.67*	1.09*	3	0.32
Mid test	2.95	-	-	0.42*	2	0.26
Post test	3.37	-	-	-	-	-

* Significant

Table III and IV shows that the obtained mean differences between the pretest and the mid test (8th week) were found to be higher than the critical value at 0.05 level in arm power. It is inferred from the results of the study that adapted physical activities group had significant changes due to adapted physical activities in arm power and there is no significant difference in speed from the 1st phase to the 2nd phase.

The obtained mean differences between the mid test and the post test (16th week) were found to be higher than the critical value at 0.05 level in speed and arm power. It is inferred from the results of the study that adapted physical activities group had significant changes due to adapted physical activities in speed and arm power from the 2nd phase to the 3rd phase.

The obtained mean differences between the pretest and the post test (12th week) were found to be higher than the critical value at 0.05 level in speed and arm power. It is inferred from the results of the study that adapted physical activities group had significant changes due to adapted physical activities in speed and arm power from the 1st phase to the 3rd phase.

Table-V
Analysis Of Covariance Adapted Physical Activities And Control Groups On Speed

Test	Adapted physical activities group	Control group	Source of variance	Sum of square	df	Mean square	F-ratio
Pre Test mean	12.08	12.11	Between	0.004	1	0.004	0.001
			Within	434.82	18	24.16	
Post test mean	8.91	12.22	Between	54.78	1	54.78	4.90*
			Within	201.04	18	11.18	
Adjusted post test mean	8.92	12.21	Between	54.25	1	54.25	11.62*
			Within	79.35	17	4.69	

* Significant at 0.05 level.

A closer look at table-V reveals the computation of 'F' ratios on pre test, post test and adjusted post test means of speed of adapted physical activities groups and control group.

The obtained 'F' ratio for the pre test means of speed of adapted physical activities groups and control group is found to be 0.001. Since the 'F' value is less than the required table value of 4.41 for the degrees of freedom 1 and 18, it is found to be not significant at 0.05 level of confidence.

Further, the post test 'F' ratio 4.90 is higher than the required table value of 4.41 for the degrees of freedom 1 and 18 and hence it is found to be statistically significant at 0.05 level of confidence.

The obtained 'F' ratio for the adjusted post test means of leg speed of adapted physical activities groups and control group is 11.62. Since the 'F' value is higher than the required table value of 4.45 for the degree of freedom 1 and 17, it is found to be statistically significant at 0.05 level of confidence.

The adjusted post test mean values of adapted physical activities groups and control group are graphically presented in figure- 1.

Figure-1
Adjusted Post Test Mean Value Of Adapted Physical Activities And Control Groups On Speed

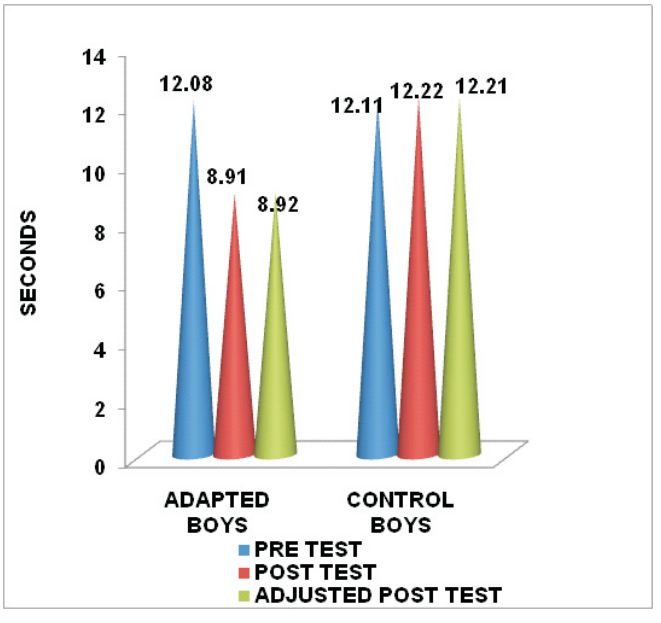


Table-VI
Analysis Of Covariance Adapted Physical Activities And Control Groups On Arm Power

Test	Adapted physical activities group	Control group	Source of variance	Sum of square	df	Mean square	F-ratio
Pre Test mean	2.28	2.15	Between	0.09	1	0.09	0.22
			Within	7.06	18	0.39	
Post test mean	3.37	2.30	Between	5.67	1	5.67	14.72*
			Within	6.93	18	0.38	
Adjusted post test mean	3.31	2.36	Between	4.51	1	4.51	37.63*
			Within	2.04	17	0.12	

* Significant at 0.05 level.

A closer look at table-VI reveals the computation of 'F' ratios on pre test, post test and adjusted post test means of arm power of adapted physical activities groups and control group.

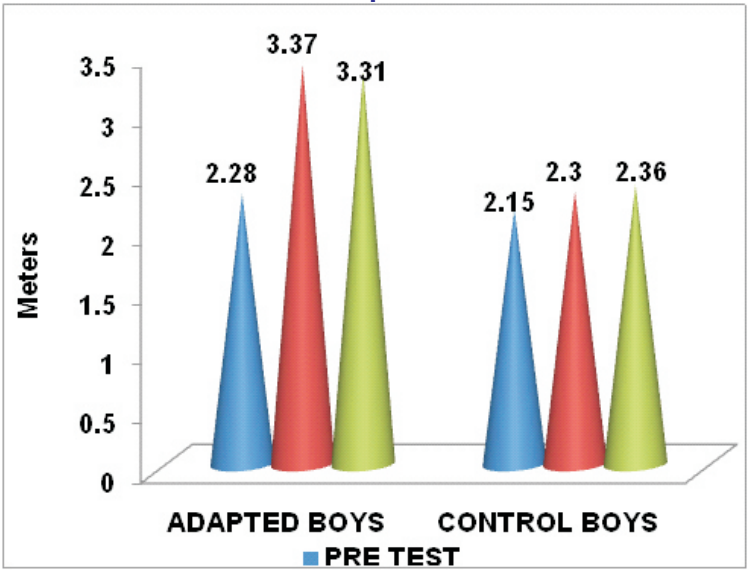
The obtained 'F' ratio for the pre test means of arm power of adapted physical activities groups and control group is found to be 0.22. Since the 'F' value is less than the required table value of 4.41 for the degrees of freedom 1 and 18, it is found to be not significant at 0.05 level of confidence.

Further, the post test 'F' ratio 14.72 is higher than the required table value of 4.41 for the degrees of freedom 1 and 18 and hence it is found to be statistically significant at 0.05 level of confidence.

The obtained 'F' ratio for the adjusted post test means of arm power of adapted physical activities groups and control group is 37.63. Since the 'F' value is higher than the required table value of 4.45 for the degree of freedom 1 and 17, it is found to be statistically significant at 0.05 level of confidence.

The adjusted post test mean values of adapted physical activities groups and control group are graphically presented in figure-2.

Figure - 2
Adjusted Post Test Mean Value Of Adapted Physical activities And Control Groups On Arm Power



DISCUSSION ON FINDINGS:

The results of the study indicates that there was significant changes in speed and arm power due to the influence of adapted physical activities training, between pre and mid test; mid test and post test; pre and post test. However there was no statistically significant change in speed and arm power of control group. The results of the analysis reveals that the adapted physical activities training and control group had differed significantly in speed and arm power. Adapted physical activities training group, produced significant changes on speed and arm power than the control group. In the context of the present trend the rational use of adapted physical activities are essential to improve the bio motor variables namely speed and arm power. The results conformity with other studies **Dibakar and Alagesan (2012) and Cowden and Tymeson (1984).**

CONCLUSIONS:

Within the limitations and on the basis of the findings of the study,

- It is concluded that adapted physical activities produced significant changes in the selected bio-motor variables namely speed and arm power of boys with intellectually disability.
- It is also concluded that the control group did not show any significant difference in the selected bio-motor variables namely speed and arm power of boys with intellectually disability.
- Further, it is also concluded that the adapted physical activities group has significant improvement than the control group on the selected bio-motor variables namely speed and arm power of boys with intellectually disability.

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