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Impact of Adapted Physical Activities on Selected Motor Fitness Variables of Girls with Intellectual Disability

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Abstract

The purpose of this study was to find out the impact of adapted physical activities on selected motor fitness variables of girls with intellectual disability. For this study, 20 mild intellectually challenged girls 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 motor fitness variables namely leg explosive power 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. It is concluded that adapted physical activities produced significant changes in the selected motor fitness variables namely leg explosive power and arm power of girls with intellectually disability. It is also concluded that the control group did not show any significant difference in the selected motor fitness variables namely leg explosive power and arm power of girls with intellectually disability. Further, it is also concluded that the adapted physical activities group has significant improvement than the control group on arm power of girls with intellectually disability.

Keywords: Adapted physical activities, leg explosive power, arm power and intellectually challenged children.

Introduction

Intellectual disabilities mean a diversity of abilities and potential among the disabled, which the educators must be ready to accept as such. Intellectual disability presents a substantial disadvantage to an individual for functioning in any society. Intellectual disability includes cognitive limitations as well as functional limitations in such areas as daily living skills, social skills and communication. Intellectual disability is a generalized disorder. It is characterized by significantly impaired cognitive functioning and deficits in two or more adaptive behaviors 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 behavioral. 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 syndrome. 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

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appropriate activities. Physical activity, recreation, and sports participation for children with disability can provide practical suggestions to pediatric health care professionals for the promotion and participation of intellectually disabled children. People with severe or profound intellectual disability need more intensive support and supervision their entire lives. They may learn some activities of daily living. Some require full-time care by an attendant (Daily et.al. 2000).

Methodology

Selection of Subjects

For this study 20 mild category intellectually challenged girls 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

Motor fitness Variables

- leg explosive power
- Arm power

Table I. Criterion Measures

S. No	Motor fitness Variables	Test	Unit of measurement
1.	leg explosive power	Standing broad jump	In centimeters
2.	Arm power	Medicine ball throw test	In meters

Experimental Design

To achieve the purpose of the present study, 20 mild intellectually challenged girls 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, 10 subjects 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 motor fitness variables namely leg explosive power 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

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	leg explosive power	Between	0.09	2	0.04	3.56*
		Error	0.23	18	0.01	
	Arm power	Between	2.11	2	1.05	11.28*
		Error	1.68	18	0.09	
Control group	leg explosive power	Between	0.006	2	0.003	0.20
		Error	0.289	18	0.02	
	Arm power	Between	0.001	2	0.001	0.003
		Error	3.26	18	0.18	

*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 leg explosive power and arm power. And it reveals that there is no significant difference among the means of three tests of control group in leg explosive power 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 III and IV.

Table III. Newman keuls test for differences between treatment means of leg explosive power of adapted physical activities group

Means		Ordered means			Range (r)	Critical Value
		Pre test	Mid test	Post test		
		0.59	0.65	0.72		
Pre test	0.59	-	0.065	0.13*	3	0.13
Mid test	0.65	-	-	0.07	2	0.11
Post test	0.72	-	-	-	-	-

* Significant

Table IV. Newman keuls test for differences between treatment means of arm power of adapted physical activities group

Means		Ordered means			Range (r)	Critical Value
		Pre test	Mid test	Post test		
		2.50	2.68	3.13		
Pre test	2.50	-	0.18	0.63*	3	0.35
Mid test	2.68	-	-	0.45*	2	0.29
Post test	3.13	-	-	-	-	-

* Significant

Table III and IV shows that the obtained mean differences between the pretest and the mid test (8^{th} 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 1^{st} phase to the 2^{nd} phase. The obtained mean differences between the mid test and the post test (16^{th} week) were found to be higher than the critical value at 0.05 level in leg explosive power 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 leg explosive power and arm power from the 2^{nd} phase to the 3^{rd} phase. The obtained mean differences between the pretest and the post test (12^{th} week) were found to be higher than the critical value at 0.05 level in leg explosive power 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 leg explosive power and arm power from the 1^{st} phase to the 3^{rd} phase.

Table V. Analysis of covariance adapted physical activities and control groups on leg explosive power

Test	Adapted physical activities group	Control group	Source of variance	Sum of square	df	Mean square	F-ratio
Pre Test mean	0.586	0.599	Between	0.001	1	0.01	0.01
			Within	0.95	18	0.05	
Post test mean	0.723	0.622	Between	0.05	1	0.05	1.43
			Within	0.64	18	0.03	
Adjusted post test mean	0.725	0.620	Between	0.05	1	0.005	0.19
			Within	0.49	17	0.03	

* 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 leg explosive power of adapted physical activities group and control group. The obtained 'F' ratio for the pre test means of leg explosive power of adapted physical activities group and control group is found to be 0.01. 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 1.43 is lesser than the required table value of 4.41 for the degrees of freedom 1 and 18 and hence it is found to be not significant at 0.05 level of confidence. The obtained 'F' ratio for the adjusted post test means of leg explosive power of adapted physical activities group and control group is 0.19. Since the 'F' value is lesser than the required table value of 4.45 for the degree of freedom 1 and 17, it is found to be statistically no 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-I.

Figure I. Adjusted post test mean value of adapted physical activities and control groups on leg explosive power

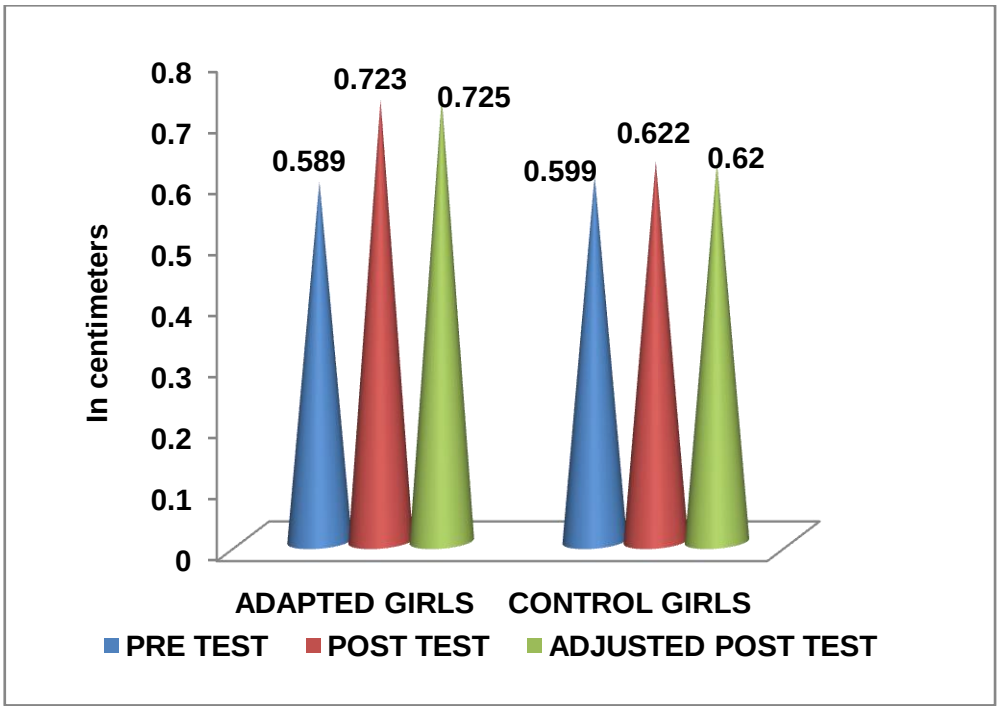


Table VI. Analysis of covariance adapted physical activities and control groups on arm power

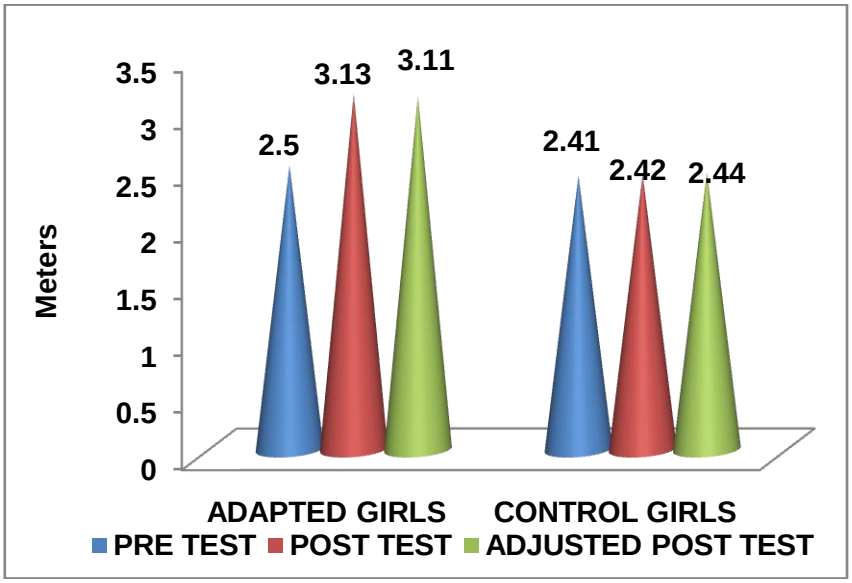
Test	Adapted physical activities group	Control group	Source of variance	Sum of square	df	Mean square	F-ratio
Pre Test mean	2.50	2.41	Between	0.03	1	0.03	0.06
			Within	11.26	18	0.63	
Post test mean	3.13	2.42	Between	2.48	1	2.48	11.71*
			Within	3.81	18	0.21	
Adjusted post test mean	3.11	2.44	Between	2.26	1	0.26	16.60*
			Within	2.32	17	0.14	

* 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 group and control group. The obtained 'F' ratio for the pre test means of arm power of adapted physical activities group and control group is found to be 0.06. 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 11.71 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 group and control group is 16.60. 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 group and control group are graphically presented in figure -II.

Figure II. 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 is a significant changes in leg explosive power between pre test and post test and there is no significant changes between pre test and mid test; mid test and post test due to the impact of adapted physical activities. Further it indicates that there is a significant changes in arm power between pre test and post test; mid test and post test and there is no significant changes between pre test and mid test due to the impact of adapted physical activities. However there is no statistically significant change in leg explosive power and arm power of control group. The result of the analysis reveals that the adapted physical activities training and control group had differed significantly in arm power. Also the result of the analysis reveals that the adapted physical activities training and control group had not differed significantly in leg explosive power. Adapted physical activities training group, produced significant changes on arm power than the control group. In the context of the present trend the rational uses of adapted physical activities are essential to improve the motor fitness variables namely leg explosive power 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,

1. It is concluded that adapted physical activities produced significant changes in the selected motor fitness variables namely leg explosive power and arm power of girls with intellectually disability.
2. It is also concluded that the control group did not show any significant difference in the selected motor fitness variables namely leg explosive power and arm power of girls with intellectually disability.
3. Further, it is also concluded that the adapted physical activities group has significant improvement than the control group on arm power of girls with intellectually disability.

References

1. Ananda Ghosh., & Srinivasan, M. (2016). Impact of adapted yoga with recreational games practice on selected biomotor variables of intellectually challenged children. *International Journal of Adapted Physical Education & Yoga*, Vol. 1, No. 2, pp. 8-16.
2. Auxter, D., Pyfer, J., & Huettig, C. (1997). Principles and Methods of Adapted Physical Education and Recreation. Mental Retardation. Mosby, New York, NY.
3. Carol. (2004). Conducted a study on physical activity intervention for older adults with

intellectually disability. Journal of child psychology and psychiatry.
4. Cowden, J., & Tymeson, G. (1984). Certification in adapted special physical education: national status update. Dekalb III L Northern Illinois University.
5. Dibakar and Alagesan (2014), Effects of isolated and combined practice of recreational games and yogasanas on selected physical physiological and psychomotor variables of intellectual challenged children, Unpublished Doctoral Thesis, Rama Krishna Vivekananda University, Coimbatore, India.
6. Dunn J.M. (1997). Special Physical Education: Adapted, Individualized, Developmental. Mental Retardation. Brown & Benchmark: Madison, WI.
7. Srinivasan, M. (2013). Analysis of selected psychological variables between the athletes and athletes with disabilities. International Journal of Physical Education, fitness and sports, Vol. 2, Issue 3, pp. 6-11.