



Research article

DESIGN AND DEVELOPMENT OF RECREATIVE ADAPTED GADGETS AND PHYSICAL ACTIVITIES AND THEIR EFFECTS ON FUNCTIONAL ABILITIES AND PSYCHOMOTOR ABILITIES OF INTELLECTUALLY CHALLENGED CHILDREN

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Abstract

*The purpose of the study is to develop and design adapted physical activities and adapted recreative gadgets and to find out the effect of adapted physical activities and recreative adapted gadgets on psychomotor abilities and functional abilities of intellectually challenged children. To achieve this purpose a total number of 100 intellectually challenged children of mild category, 50 in the age group of 12 – 13 years and 50 in the age group of 13-14 years were randomly selected from TAT Kalanilayam Middle School, Periyanaickenpalayam, Therapy Unit, Ramakrishna Mission Vivekananda University, Coimbatore, Vidya Vikasini Higher Secondary School, Thudiyalur, Prashanthini Special School, Coimbatore..The pre tests and post tests after six months of training in the adapted gadgets and adapted activities were conducted in all the selected psychomotor variables and functional abilities of intellectually challenged children. The collected data were analysed using *t* ratio to find out the significant improvement in the selected variables by both the groups. ANCOVA was applied to find out the significant difference between the groups. The statistical analysis showed that the intellectually challenged children of both the age groups had significantly improved in all the selected psychomotor variables namely Finger Dexterity, Reaction Time, Arm hand steadiness, Manual Dexterity and Multi limb coordination and Functional Ability. The results of ANCOVA had shown that there is significant difference between the 12-13 year age group and the 13-14 year age group in Finger Dexterity, Manual Dexterity, Arm hand Steadiness and Functional Ability. There is no significant difference between the two groups in Reaction time and Multi limb coordination*

KEY WORDS: Adapted recreative gadgets, intellectually challenged children, psychomotor variables, Finger Dexterity, Reaction Time, Arm hand steadiness, Manual Dexterity and Multi limb coordination, and Functional Ability.

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INTRODUCTION

Individuals with handicapped condition are with unique needs. The handicapped condition includes visual impairment, intellectual impairment and orthopedic impairments. These individuals require specially designed programmes to rehabilitate physical and motor functional skills and social skills. Professional physical educators are well aware of the value of physical fitness. They recognize that physical fitness is important for improved health, a more attractive appearance and increased physical performances. Physical educators must also be aware that physical fitness has greater significance for people with handicapped conditions.

A person who as a paraplegic spinal cord injury has a greater need for upper body strength for wheel chair propulsion, a person with spastic cerebral palsy has a greater need for flexibility training because hypotonic muscle restrict movement and people with visual impairment and mental retardation have a greater need for cardio

respiratory endurance and weight loss training because of the sedentary lifestyle frequency associated with these conditions.

Adapted physical education program is a diverse program of developmental activities, exercises, games, rhythms and sports designed to meet the unique needs of individuals. Ramakrishna Mission Vivekananda University organized a unified play day for the intellectually challenged children for the past 3 years. Around 400 intellectually challenged children participated in the programmes which include physical activities, play therapy, music therapy, psychological test and art therapy. In the psychological tests, there were standardized tests which measure various psychomotor abilities. Some gadgets which will improve the psychomotor abilities which are recreative in nature were used during the programme. This has motivated the investigator to prepare some more recreative gadgets which will benefit the intellectually challenged children.

REVIEW OF RESEARCH AND DEVELOPMENT IN THE SUBJECT

Professionals have been developing and refining strategies to promote the development of young children with disabilities for many years. Play is the primary force in the learning and development of young children (Berk, 1994). In early childhood education, play is viewed as a medium or change and a means to foster and, enhance, cognitive, social and emotional development (Ivory and McCollum 1999).

Beckman and Kohl (1984) found children with disabilities who were engaged in free play resembled their peers than if the children were in a class room setting. A variety of strategies have been used to teach social play skills to young children with disabilities and increase interactions between children with disabilities and their nondisabled peers (Strain, 1990).

The use and manipulation of toys and playthings are strategies to increase

social interactions among children (Retting, Kallam and McCaethy-salm, 1993). For the purpose of research, toys are divided in to two categories, social and isolate (Bridges, 1999).

With more importance provided by the society, a project on recreation and fitness for the intellectually challenged children was launched. Special Olympics movement had been established to encourage intellectually challenged children to participate in sports and games. In America adapted play activities had

attracted much attention through the use of perceptual motor activities as a basis or modality for academic and intellectual development.

Contemporary direction and emphasis in adapted physical activities are heavily associated with the individuals of a free and appropriate education. Legislation was also resulted in more money for professional preparation, research and other special projects for persons with unique needs.

METHODOLOGY

The purpose of the study is to develop and design adapted physical activities and adapted recreative gadgets and to find out the effect of adapted physical Activities and recreative adapted gadgets on psychomotor abilities and functional abilities of intellectually challenged children.

Selection of Subjects

To achieve this purpose a total number of 100 intellectually challenged children of mild category in the age group of 12 – 14 years were randomly selected from TAT Kalanilayam Middle School, Periyanaickenpalayam, Therapy Unit, Ramakrishna Mission Vivekananda University, Coimbatore, Vidya Vikasini Higher Secondary School, Thudiyalur, Prashanthini Special School, Coimbatore. Among the selected subjects, 50 were boys and 50 were girls in which 25 boys and 25

girls in 12 -13 age category and 25 boys and 25 girls in 13 – 14 age category.

Selection of variables

The following variables were selected and the data were collected using the appropriate tools.

S.NO	VARIABLES	PARAMETERS
1	Finger Dexterity	Finger Dexterity Board
2	Reaction Time	Reaction timer
3	Arm hand steadiness	Steadiness test
4	Manual Dexterity	Finger manipulative test
5	Multi limb coordination	Division of attention Board
6	Functional Ability	Functional assessment checklist for programming

The pre tests were conducted among the selected 100 subjects in all the selected psychomotor variables and functional

abilities of intellectually challenged children. The investigator visited various schools and conducted test and kept as pre scores. For functional ability test the concerned teachers were given the prescribed form to assess the functional ability of the children.

Training

The training in the adapted gadgets and adapted activities were given to both the groups for a period of 6 months as follows:

Training period: 6 months

Training sessions: 3 days per week
Duration of one session: 60 minutes

Post tests were conducted for both the groups in all the selected variables as in the pretests.

Statistical technique

The collected data were analysed using t ratio to find out the significant improvement in the selected variables by both the groups. ANCOVA was applied to find out the significant difference between the groups.

RESULTS AND DISCUSSION

The results of the significant difference between the pre tests and post tests were analysed using t ratio and the results are presented.

TABLE - I
ANALYSIS OF T RATIO FOR THE SELECTED VARIABLES
OF 12-13 AGE GROUPS

S.No.	VARIABLES		MEAN	T	SIGNIFICANT
1	Finger dexterity	Pre	17.88	6.92*	Significant
		Post	20.02		
2	Reaction time	Pre	0.37	9.33*	Significant
		Post	0.30		
3	Manual Dexterity	Pre	5.45	8.33*	Significant
		Post	4.76		
4	Multilimb coordination	Pre	19.44	12.49*	Significant
		Post	22.60		
5	Arm hand steadiness	Pre	167.48	13.18*	Significant
		Post	146.60		
6	Functional Ability	Pre	49.44	17.35*	Significant
		Post	59.22		

Significant at 0.05 levels

Table – Indicates that the Obtained ‘t’ ratios on all the selected variables are found to be greater than the required table value of 2.01 at 0.05 level of significance for

49 degrees of freedom. The results of this study are statistically significant and explained their effects positively.

TABLE - II
ANALYSIS OF T RATIO FOR THE SELECTED VARIABLES
OF 13-14 AGE GROUPS

S.No	VARIABLES		MEAN	t	SIGNIFICANT
1	Finger dexterity	Pre	19.84	9.90*	Significant
		Post	22.96		
2	Reaction time	Pre	0.29	8.05*	Significant
		Post	0.23		
3	Manual Dexterity	Pre	4.49	7.74*	Significant
		Post	4.10		
4	Multilimb coordination	Pre	12.22	10.84*	Significant
		Post	14.74		
5	Arm hand steadiness	Pre	141.82	18.97*	Significant
		Post	122.06		
6	Functional Ability	Pre	49.72	29.50*	Significant
		Post	61.60		

Significant at 0.05 levels

Table – II indicates that the Obtained ‘t’ ratios on all the selected variables are found to be greater than the required table value of 2.01 at 0.05 level of significance for

49 degrees of freedom. The results of this study are statistically significant and explained their effects positively.

TABLE - III
ANALYSIS OF ANCOVA FOR THE ADJUSTED POST TEST MEAN
OF 12-13 AGE GROUP AND 13-14 AGE GROUP

S.No	Variables	adjusted post test mean		Source of variance	Sum of squares	Mean square	df	F ratio
		12-13 years	13-14 Years					
1	Finger dexterity	20.02	22.96	BG	455.49	5.06	1	4.28*
				WG	21.65	21.65	97	
2	Reaction time	0.30	0.23	BG	0.08	0.001	1	1.35
				WG	0.001	0.001	97	
				WG	0.00	0.00	97	
3	Manual Dexterity	4.76	4.10	BG	14.06	0.16	1	4.04*
				WG	0.63	0.63	97	
				WG	0.56	0.56	97	
4	Multilimb coordination	22.60	14.74	BG	276.33	3.07	1	3.07
				WG	9.43	9.43	97	
5	Arm hand steadiness	146.60	122	BG	3021.38	33.57	1	8.24*
				WG	276.52	276.52	97	
6	Functional Ability	59.22	61.60	BG	1172.76	12.09	1	9.24*
				WG	111.76	111.76	97	

Significant at 0.05 levels

Table – III indicates that the Obtained F ratios for the Adjusted post test means of Finger Dexterity, Manual Dexterity, Arm Hand Steadiness and Functional Ability are found to be greater than the required table value of 3.94 at 0.05 level of significance for 97 degrees of

freedom. The results of this study are statistically significant and explained their effects positively. The obtained F ratios for Reaction time and Multilimb coordination are found to be lesser than the required table value hence there is no significant difference between the groups.

DISCUSSION ON FINDINGS

The statistical analysis showed that the intellectually challenged children of 12-13 years age group had significantly improved in all the selected psychomotor variables namely Finger Dexterity, Reaction Time, Arm hand steadiness, Manual Dexterity and Multi limb coordination and Functional Ability.

The findings also revealed that the intellectually challenged children of 13-14 years age group had significantly improved in all the selected psychomotor variables namely Finger Dexterity, Reaction Time, Arm hand steadiness, Manual Dexterity and Multi limb coordination and Functional

Ability. The results were confirmed with the findings of Retting, Kallam and McCaethysalm (1993).

The results of ANCOVA had shown that there is significant difference between the 12-13 year age group and the 13-14 year age group in Finger Dexterity, Manual Dexterity, Arm hand Steadiness and Functional Ability. There is no significant difference between the two groups in Reaction time and Multi limb coordination.

The results may be due to the more exposure and maturity level of the 13-14 years children.

CONCLUSIONS

- The 13-14 year age group children had shown better improvement than the 12-13 year age group intellectually challenged children in Manual Dexterity, and Functional Ability. The 12-13 year age group children had shown better improvement than the 13-14 year age group intellectually challenged children in Finger Dexterity and Arm hand steadiness.

- The 13-14 year age group children had shown a trend in its favor though statistically not significant than the 13-14 year age group intellectually challenged children in Reaction Time and Multi limb coordination.
- The 13-14 year age group children had shown better improvement than the 12-13 year age group intellectually challenged children in Finger Dexterity, Manual

Dexterity, Arm Hand Steadiness and Functional Ability

- The 12-13 year age group children had shown a trend in its favor though statistically not significant than the 13-14 year age group intellectually challenged children in Multi Limb Coordination.

- The 13-14 year age group children had shown a trend in its favor though statistically not significant than the 12-13 year age group intellectually challenged children in Reaction Time.

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