

**INFLUENCE OF ADAPTED INTERVAL EXERCISES ADAPTED
YOGA AND SKILL PRACTICES ON REACTION TIME AMONG
SPECIAL OLYMPICS FOOTBALL PARTICIPANTS**

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Abstract

The purpose of this study was to find out the influence of adapted interval exercises adapted yoga practices and skill practices on reaction time among Special Olympics football participants. For this study purpose, investigator selected forty (40) Mild Intellectually Disabled participants from Faculty of Disability Management and Special Education (FDMSE) Perianaickenpalayam and Koumari Prasanthini Special School, Thudialur, Coimbatore, Tamilnadu, India. The age group of subjects ranged between 12-17 years. The groups were selected as Adapted Interval Exercises Training (AIET) Group, Adapted Yoga Practices Training (AYPT) Group, Specific Football Skill Practices Training (SFST) Group and Group-IV acted as Control Group. Pre-test, mid-test and post-test were conducted on Reaction time for all the groups. After pre-test experimental group I, II and III were treated with adapted interval exercises training, adapted yoga practices training and specific football skill practices training for duration of one hour, five days per week for a period of eight weeks respectively and tests were conducted for all the groups after eight weeks as mid-test and after 16 weeks as post-test. The reaction time was tested with reaction time apparatus (Chronoscope). Collected data were treated with Repeated Measures ANOVA. If the obtained 'F' ratio was found to be significant, the Newman-Keuls post hoc test was applied. The result shows that there was a significant difference among the three tests. The results of the analysis of covariance (ANCOVA) revealed that there is significant difference among the adjusted post-test means. Then the results of the Scheffe's post hoc test show significant difference between the paired means in reaction time.

Keywords: Special Olympics, adapted interval exercises, adapted yoga practices, specific football skill practices, reaction time.

INTRODUCTION

The global Special Olympics movement was started on 20 July 1968, when first international games were held at Soldiers Field, Chicago, Illinois, USA. But Special Olympics concept was born much earlier, when Eunice Kennedy Shriver in July 1962, invited 35 boys to her home in Rockville, Maryland, to explore their capabilities in a variety of sports and physical activities. The movement grew beyond the Kennedy Foundation, and between 1963 and 1968, more than 300 camps similar to Camps Shriver were started. Special Olympics, 2010 was a global movement with 2.5million participants from more than 180 countries around the world. The Official Special Olympics Sports Rules football (Soccer) shall govern all Special Olympics competitions. As an international sports program, Special Olympics has created these rules based upon Federation International de Football Association

(FIFA) rules for football (soccer). FIFA or National Governing Body (NGB) rules shall be employed except when they are in conflict with the Official Special Olympics Sports Rules for Football (Soccer). In such cases, the Special Olympics Sports Rules for the Football shall apply (**Special Olympics Bharat, 2010**).

The list of Special Olympics official events of football are individual skills competition (ISC), 5-a side team (outdoor), 7-a side team (outdoor), 11-a side team competition according to FIFA rules, futsal competition according to FIFA rules, unified sports 5-a side team competition, unified 7-a side team competition and unified sports 11-a side team competition. The range of events is intended to offer competition opportunities for athletes of all abilities. Programs may determine the events offered and, if required, guidelines for the management of those events. Coaches are responsible for providing training and event selection to each athlete's skill and interest (**S.O.B, 2010**). According to **Jill M. Le Clair**, 'the necessity for a strong and healthy body in a world of limited technology frames disability as a liability for both survival and success. In highly industrialized and wealthy societies, technology supports the ideology of individual rights and impacts on all bodies.' It is founded on the belief that people with intellectual disabilities can, with proper instruction and encouragement, learn, enjoy, and benefit from participation in individual and team sports (**Philosophy of SOB, 2010**).

Methodology

The purpose of this study was to find out the influence of adapted interval exercises, adapted yoga practices and skill practices on reaction time among Special Olympics football participants. For this study purpose, investigator selected forty (40) Mild Intellectually Disabled players from Faculty of Disability Management and Special Education (FDMSE) Perianaickenpalayam and Koumari Prasanthini Special School, Thudialur, Coimbatore, Tamilnadu, India respectively. The age group of subjects ranged between 12-17 years. The groups were selected as Adapted Interval Exercises Training (AIET) Group, Adapted Yoga Practices Training (AYPT) Group, Specific Football Skill Practices Training (SFST) Group and Group-IV acted as Control Group. Pre-test, mid-test and post-test were conducted on Reaction time for all the groups. After pre-test experimental group I, II and III were treated with adapted interval exercises training, adapted yoga practices training and specific football skill practices training for duration of one hour, five days per week for a period of eight weeks respectively and tests were conducted for all the groups after eight weeks as mid-test and after 16 weeks as post-test. For intensity, the difficulty level of exercises was increased for every four week. The reaction time was test with reaction time apparatus (Chronoscope). Collected data were treated with Repeated Measures ANOVA. If the 'F' ratio was found to be significant, the Newman-Keuls post hoc test was applied. Analysis of covariance (ANCOVA) was used to find out the significant difference among the groups. And if 'F' ratio was found the significant to be Scheffe's post hoc test was applied to find out the significant paired mean difference among the groups.

Results

Repeated Measures ANOVA and Newman-Keuls test.

The training effects of Adapted interval exercises group, Adapted yoga practices group, Specific football skill practices group and Control group among the pre-test, mid-test and the post-test were analyzed and presented in the following table-1.

Table -1

ANALYSIS OF REPEATED MEASURES ANOVA ON REACTION TIME					
Groups	Sources of variance	Sum of Squares	Degree of freedom	Mean Squares	Obtained 'F' ratio
Adapted Interval Exercises	Between	0.034	2	0.017	5.987*
	Error	0.050	18	0.003	
Adapted Yoga Practices	Between	0.004	2	0.002	0.251
	Error	0.133	18	0.007	
Specific Football Skills Practices	Between	0.162	2	0.081	25.812*
	Error	0.056	18	0.003	
Control	Between	0.001	2	0.000	0.129
	Error	0.035	18	0.002	

The table value required for significance at 0.05 level with degree of freedom 2 and 18 is 3.55

An examination of table-1 shows that the obtained 'F' ratio values of Adapted interval exercises group and specific football skills practices group are 5.987 and 25.812 respectively on the selected variable namely Reaction time. The results are greater than the table value of 3.55 with degree of freedom 2 and 18 required for significance at 0.05 level of confidence. The 'F' ratio for adapted yoga practices group and control group 0.251 and 0.129 respectively are lesser than the required table value. The results of the study indicated that there is significant difference among the means of three tests in Reaction time except adapted yoga practices group and control group.

Results of Newman-Keuls Test

Significant 'F' ratios were obtained among the various treatment means in Reaction time. In order to find out the significant differences between all the possible pairs of means Newman-Keuls test were presented in Table-2.

Table-2

NEWMAN-KEULS TEST ON DIFFERENCE BETWEEN TREATMENT MEANS OF REACTION TIME							
Adapted interval exercises group	Treatment		Pre-test	Mid-test	Post-test	R	RCV
	Mean		0.392	0.337	0.312		
	Pre-test	0.392	-	0.056	0.080*	3	0.062
	Mid-test	0.337	-	-	0.024	2	0.051
	Post-test	0.312	-	-	-	-	-
	R		-	2	3	-	-
	Value at 0.05 level		-	2.97	3.61	-	-
	RCV		-	0.051	0.062	-	-
Specific football skill practices group	Treatment		Pre-test	Mid-test	Post-test	R	RCV
	Mean		0.4321	0.3229	0.2536		
	Pre-test	0.4321	-	0.109*	0.179*	3	0.062
	Mid-test	0.3229	-	-	0.069*	2	0.051
	Post-test	0.2536	-	-	-	-	-
	R		-	2	3	-	-
	Value at 0.05 level		-	2.97	3.61	-	-
	RCV		-	0.051	0.062	-	-

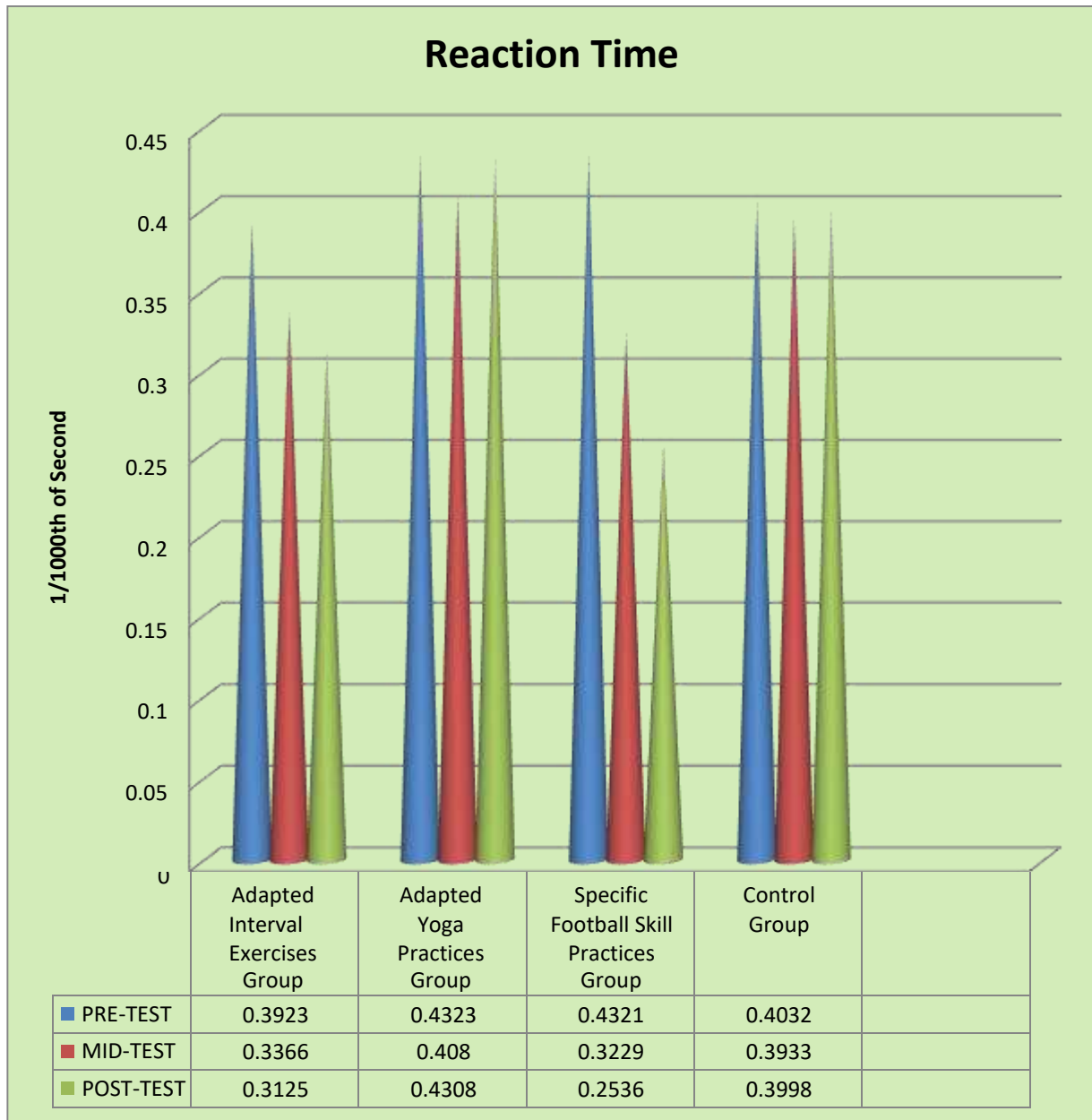
Studentized range values for (2, 18) and (3, 18) are 2.97 and 3.61 respectively.

The obtained mean differences between the pre-test and the post-test (initial test and 16 weeks) is greater than the critical value and found to be significant at 0.05 level in Reaction time of Adapted interval exercises group. The mean differences between the pre-test and the mid-test (initial test and 8 weeks) and between the mid-test and post-test (8 weeks and 16 weeks) in the Adapted interval exercises group are found to be not significant. The results of the study indicate that 16 weeks of Adapted Interval Exercises Training programme showed significant improvement in the Reaction time.

The obtained mean differences between the pre-test and the mid-test (initial test and 8 weeks), between the pretest and the post-test (initial test and 16 weeks) and between the mid-test and post-test (8 weeks and 16 weeks) are higher than the critical value and found to be significant at 0.05 level in Reaction time in the Specific Football Skill Practices group. The results of the study indicate that first 8 weeks, last 8 weeks and 16 weeks of Specific Football Skill Practices Training programme showed significant improvement in the Reaction time.

The mean values of pre-test, mid-test and post-test of Reaction time of Adapted interval exercises group, Adapted yoga practices group, Specific football skill practices group and Control group were presented in figure-1.

Figure – 1
Bar diagram showing mean values of pretest, mid-test and post-test of Reaction time of Adapted interval exercises group, Adapted yoga practices group, Specific football skill practices group and Control group



Analysis of Covariance on Pre, Post and Adjusted Post-test means on Reaction time among Adapted interval exercises group, Adapted yoga practices group, Specific football skill practices group and Control group were presented in Table-3.

TABLE -3
Analysis of Covariance on Pre, Post and Adjusted Post-test means on Reaction time among Adapted interval exercises group, Adapted yoga practices group, Specific football skill practices group and Control group

Mean	Adapted interval exercises group	Adapted yoga practices group	Specific football skill practices group	Control Group	Source of variance	Sum of Squares	Degree of freedom	Mean Squares	F-ratio
Pre-test	0.3923	0.4323	0.4321	0.4032	BG	0.012	3	0.004	0.474
					WG	0.315	36	0.009	
Post-test	0.3125	0.4308	0.2536	0.3998	BG	0.197	3	0.066	7.591*
					WG	0.311	36	0.009	
Adjusted Post-test	0.326	0.420	0.243	0.407	BG	0.201	3	0.067	11.888*
					WG	0.197	35	0.006	

BG-Between Groups Means; WG-Within Group Means; Table value at 0.05 level of significant of confidence for 3 & 36 and 3 & 35 degree of freedom 2.87 & 2.874.

*=Significant.

Table-3 reveals the computation of ‘F’ ratios on pre-test, post-test and adjusted post-test means of Reaction time of Adapted interval exercises group, Adapted yoga practices group, Specific football skill practices group and Control group.

The obtained ‘F’ ratio for the pre-test means of Reaction time of Adapted interval exercises group, Adapted yoga practices group, Specific football skill practices group and Control group is 0.474. Since the ‘F’ ratio was lesser than the required table value of 2.87 for the degree of freedom 3 and 36, it was found to be not significant at 0.05 level of confidence. Further, the post-test and adjusted post-test ‘F’ ratios 7.591 and 11.888 respectively on Reaction time were higher than the required table value of 2.87 for the degree of freedom 3 and 36 and the degree of freedom 3 and 35 respectively, hence it was found to be statistically significant at 0.05 level of confidence. Scheffe’s Post hoc test for the differences between the paired Adjusted Post-test means of Reaction time was presented in Table-4.

TABLE-4
Scheffe's Post hoc test for the differences between the paired
Adjusted Post-test means of Reaction time

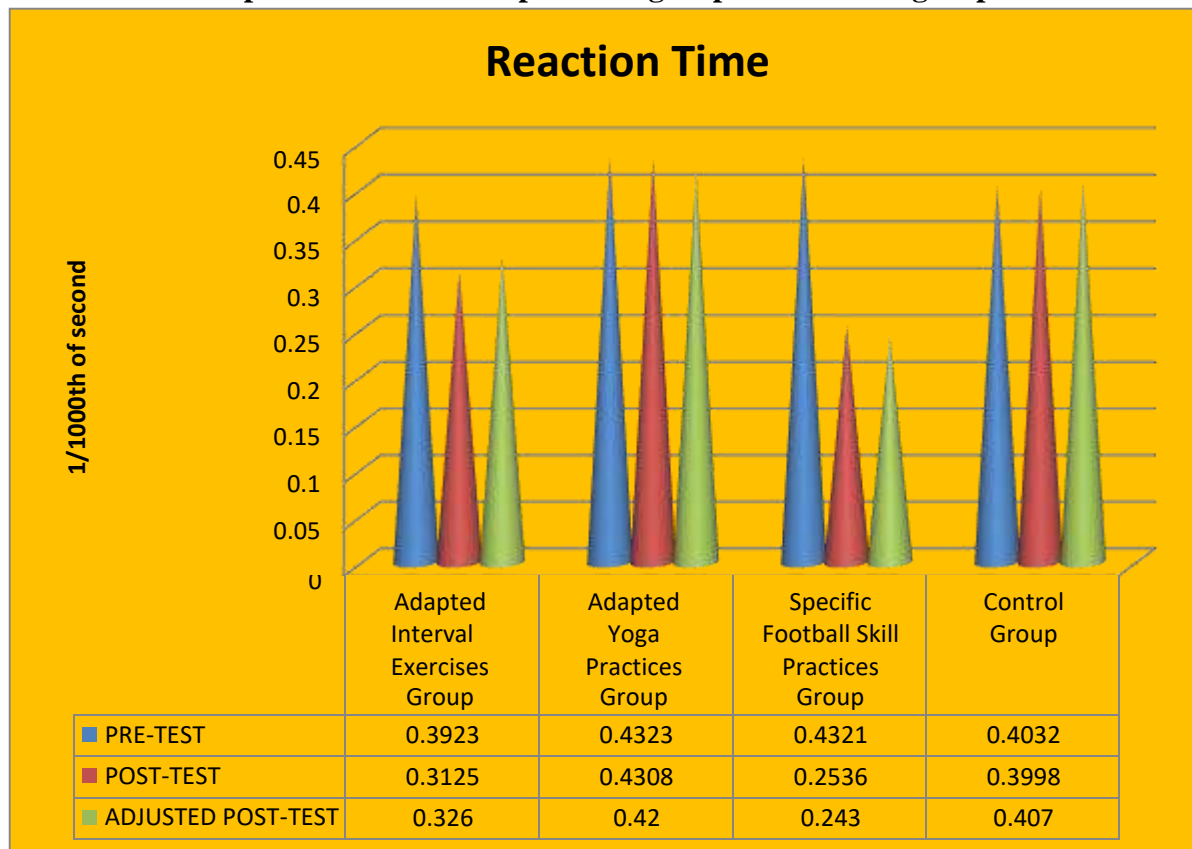
Adapted interval exercises group	Adapted yoga practices group	Specific football skill practices	Control Group	Mean difference	Scheffe's F	(K-1) F-0.05
0.326	0.420	-	-	0.094	7.3333	8.61
0.326	-	0.243	-	0.083	5.7408	8.61
0.326	-	-	0.407	0.081	5.4675	8.61
-	0.420	0.243	-	0.177	26.1075*	8.61
-	0.420	-	0.407	0.014	0.1633	8.61
-	-	0.243	0.407	0.164	22.408*	8.61

Table-4 revealed that the mean differences between the paired adjusted post-test means of all groups. The Scheffe's 'F' value for the mean difference between Adapted interval exercises group and Adapted yoga practices group and between Adapted interval exercises group and Specific football skill practices group, between Adapted interval exercises group and Control group, and between Adapted yoga practices group and Control group were 7.3333, 5.7408, 5.4675 and 0.1633 respectively. The values were lesser than that of the required Scheffe's table 'F' value 8.61, and it was found to be not significant. The Scheffe's 'F' value for the mean difference between Adapted yoga practices group and Specific football skill practices group and between Specific football skill practices group and Control group were respectively 26.1075 and 22.408. The values of Scheffe's 'F' value of adjusted post-test means were higher than that of the required Scheffe's table 'F' ratio 8.61 and it was found to be significant.

Mean values of pre, post and adjusted post-test of Reaction time of Adapted interval exercises group, Adapted yoga practices group, Specific football skill practices group and Control group were presented in figure-2.

Figure – 2

Bar diagram showing mean values of pre-test, post-test and adjusted post-test of reaction time of Adapted interval exercises group, Adapted yoga practices group, Specific football skill practices group and Control group



Discussion on Findings

The results of one way repeated measures analysis of variance (ANOVA) indicate that there is a significant improvement in Reaction time due to the influence of Adapted interval exercises programme and Specific football skill practices programme.

However, the results of the Neman Keuls test indicate that the obtained mean differences between the pre-test and the post-test (initial test and 16 weeks) is greater than the critical value and found to be significant at 0.05 level in Reaction time of Adapted interval exercises group. The mean differences between the pre-test and the mid-test (initial test and 8 weeks) and between the mid-test and post-test (8 weeks and 16 weeks) in Adapted interval exercises group are found to be not significant. The results of the study indicate that 16 weeks of Adapted Interval Exercises Training programme showed significant improvement in the Reaction time.

The obtained mean differences between the pre-test and the mid-test (initial test and 8 weeks), between the pretest and the post-test (initial test and 16 weeks) and between the mid-test and post-test (8 weeks and 16 weeks) are higher than the critical value and found to be significant at 0.05 level in Reaction time in the Adapted interval exercises group. The results

of the study indicate that first 8 weeks, last 8 weeks and 16 weeks of Specific Football Skill Practices Training programme showed significant improvement in the Reaction time.

Analysis of Covariance (ANCOVA) on the obtained 'F' ratio for the pre-test means of Reaction time was found to be not significant, and the post-test and adjusted post-test were found to be statistically significant at 0.05 level of confidence. However, the results of the Scheffe's post hoc test indicated that there are significant improvements among groups.

Pise et al. (2018), Ramajayam, M. (2017), Srinivasan and Ravi (2016), Prasad, GSP et al. (2014), Yildirim et al. (2011), Giagozoglou et al. (2013), Bhavanani and Ramanathan (2012), Yildiriam et al. (2010), Amemiya, (1982), and Nettebeck et al. (1980) has also proved in their studies that an improvement did occur in Reaction time, as pointed above, in the subjects included in their research study.

Conclusion

It is concluded that the results of repeated measures analysis of variance (ANOVA) show significant improvement in Reaction time. And the Newman Keuls tests indicate that there are significant differences from pre-test to post-test in Adapted interval exercises group and Specific football skill practices group. And there are significant differences from pre-test to mid-test and from mid-test to post-test in the Specific football skill practices group in Reaction time.

It is concluded that the results of analysis of covariance for post-test and adjusted post-test is significant. The Scheffe's post hoc test indicated that the experimental group namely Specific football skill practices group had better improvement than the Adapted yoga practices group and control group in Reaction time. There is no significant differences among the others paired mean comparisons.

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