

Influence of Minor Games on Selected Fitness Components, Cognitive Skills and Psychomotor Abilities among Mild Intellectually Challenged Children

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Abstract

The purpose of this study was to find out Influence of minor games on selected fitness components, cognitive skills and psychomotor abilities among mild intellectually challenged children from age group of 12 to 15 years both boys and girls and forty five students who were study in Erode District, . The subjects were divided in to three groups, each group consisting of 15 each. Experimental group I participated in minor game activities with partner who is normal for a period of 12 weeks training. Experimental group II participated in minor game activities among themselves for a period of 12 weeks training. Control group did not participate in minor game activities. The subjects were tested on selected criterion variables physical fitness variables as flexibility, leg explosive power and balance, Cognitive skills span of memory and span of attention and psychomotor ability reaction time, finger – eye coordination and hand – eye coordination before the training and after 12 weeks of training. The analysis of covariance was applied to find out the significant difference among the 12 -15 years of all groups in the selected variables. The “t” ratio was applied to find out significant improvement in the selected variables in each group.

Key Words: Minor Games, Minor games, intellectually challenged children and disability.

Introduction

Play is a term employed in psychology and ethology to describe a range of voluntary, intrinsically motivated activities normally associated with recreational pleasure and enjoyment. Play is most commonly associated with children and their juvenile-level activities, but play can also be a useful adult activity, and occurs among other higher-functioning animals as well.

Many of the most prominent researchers in the field of psychology (including Jean Piaget, William James, Sigmund Freud, Carl Jung and Lev Vygotsky) have viewed play as endemic to the human species.

Methodology

The method adopted, description of the tools, the sample selected, data collection

procedures and the outline of the experiment done and procedure are presented below

The Methodology for the present investigation is on the influence of Minor games on selected physical fitness components, cognitive skills and psychomotor variables among mild Intellectually challenged children which is discussed under the following headings. Selection of Subjects Experimental design, Variables, test, Tester reliability, Orientation of Subjects, Collection of data, Test Administration, Training method, Statistical Technique.

Results of Analysis of Covariance

The analysis of covariance was applied to find out the significant mean difference experimental group I (with normal partner),

experimental group II (with partner from same group) and control group in the selected variables. The results were presented in the following tables. Table 01 shows the obtained 'F' values on pre test, post test and adjusted post test means on flexibility of Minor games training groups

and control groups. The pre test means on flexibility were 7.66, 7.6 and 7.62 respectively. The 'F' value observed for the pre – test on flexibility was 0.003. It fails to reach the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence.

Table 1 Analysis of covariance among Minor games training experimental group I, experimental group II and control group on flexibility

	Minor games group I	Minor games group II	Control group	Source of variance	Sum of square	D.f	Mean square	F – value
Pre test mean	7.66	7.6	7.62	Between	0.04	2	0.02	0.003
				Within	292.53	42	6.96	
Post test mean	10.6	9.8	7.36	Between	74.97	2	37.48	5.51*
				Within	285.33	42	6.79	
Adjusted post mean	10.6	9.82	7.62	Between	72.64	2	36.32	31.30*
				Within	47.56	41	1.16	

*Significant at 0.05 level of confidence

Required table value at 0.05 level of significant with d.f 2 and 42 is 3.21 and d.f 2 and 41 is 3.22.

Based on the results it was confirmed that the mean differences among the groups of Minor games training groups and control group on flexibility before the start of the respective treatments were found to be insignificant.

The post means on flexibility of Minor games groups and control group were 10.6, 9.87 and 7.36 respectively. The 'F' value observed for the post test on flexibility was 5.51. It was greater than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on post test means

among the groups namely Minor games training groups and control group on flexibility was highly significant as the value was higher than required table value of 3.21. Thus the results obtained proved that the training on flexibility produced significant improvements among the experimental groups.

The adjusted post test means on flexibility of Minor games training groups and control group were 10.6, 9.82 and 7.6 respectively. The 'F' value observed for the post test on flexibility was 31.30. It was greater than the table value of 3.21 for

degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on adjusted post test means among the group's namely Minor games training group and control group on flexibility was

highly significant as the value was higher than required table value of 3.21. Thus the results obtained proved that the training on flexibility produced significant difference among the experimental groups.

Table 2. Analysis of covariance among Minor games training experimental group I, experimental group II and control group on explosive power

	Minor games group I	Minor games group II	Control group	Source of variance	Sum of square	D.f	Mean square	F – value
Pre test mean	107.26	105.2	103.2	Between	124.04	2	62.022	0.38
				Within	6801.73	42	161.94	
Post test mean	121.86	111.06	104.13	Between	12395.91	2	1197.95	6.87*
				Within	7320.4	42	174.29	
Adjusted post mean	119.85	111.08	106.12	Between	14256.0	2	713.0	38.86*
				Within	752.2	41	18.34	

Significant at 0.05 level of confidence

Required table value at 0.05 level of significant with d.f 2 and 42 is 3.21 and d.f 2 and 41 is 3.22.

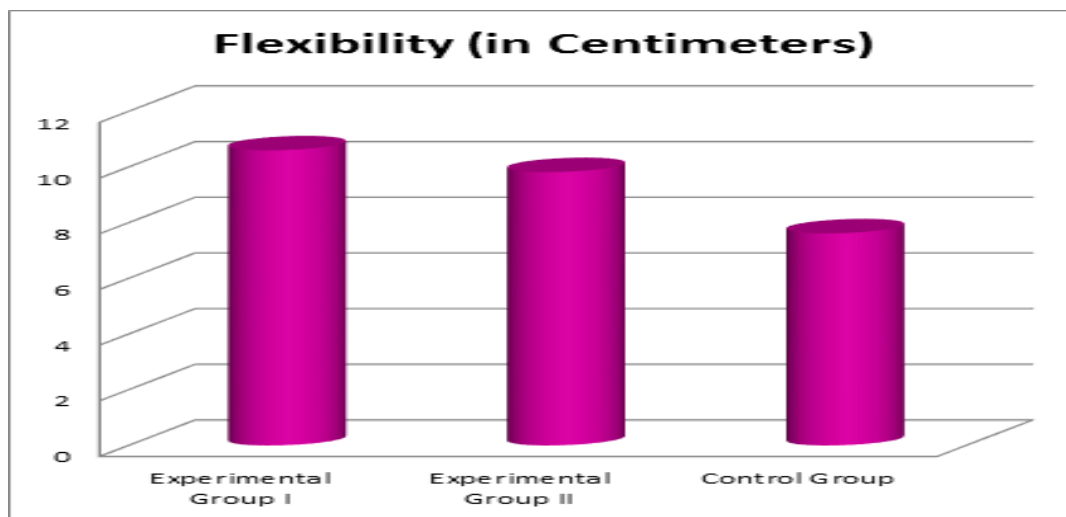


Fig 1. Adjusted mean values of flexibility of experimental group I, experimental group II and control group

Table 02 shows the obtained 'F' values on pre test, post test and adjusted post test means on explosive power of Minor games training experimental group I, Minor

games training experimental group II, and control group.

The pre test means on explosive power were 107.26, 105.2 and 103.2 respectively.

The 'F' value observed for the pre – test on explosive power was 0.38. It fails to reach the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Based on the results it was confirmed that the mean differences among the groups of Minor games training experimental group I, experimental group II and control group on explosive power before the start of the respective treatments were found to be insignificant.

The post test means on explosive power of Minor games training experimental group I, experimental group II and control group were 121.86, 111.06 and 104.13 respectively. The 'F' value observed for the post test on Explosive power was 6.87. It was greater than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on post test means among the groups namely Minor games training group experimental group I, experimental group II and control group on explosive power was highly significant as the value was higher than

required table value of 3.21. Thus the results obtained proved that the training on explosive power produced significant improvements among the experimental groups.

The adjusted post test means on explosive power of Minor games training group experimental group I, experimental group II and control group were 119.85, 111.08 and 106.12 respectively. The 'F' value observed for the post test on explosive power was 38.86. It was greater than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on adjusted post test means among the groups namely Minor games training group experimental group I, experimental group II and control group on explosive power was highly significant as the value was higher than required table value of 3.21. Thus the results obtained proved that the training on explosive power produced significant improvements among the experimental groups.

Table 3. Analysis of covariance among Minor games training experimental group I, experimental group II and control group on balance

	Minor games group I	Minor games group II	Control group	Source of variance	Sum of square	D .f	Mean square	F – value
Pre test mean	11.93	11.00	11.26	Between	6.93	2	3.46	0.16
				Within	879.986	42	2.94	
Post test mean	17.33	15.2	19.93	Between	271.9	2	110.95	4.41*
				Within	1054.66	42	25.11	
Adjusted post mean	16.81	15.58	12.06	Between	182.24	2	91.12	16.77*
				Within	222.66	41	50.4	

*Significant at 0.05 level of confidence

Required table value at 0.05 level of significant with d.f 2 and 42 is 3.21 and d.f 2 and 41 is 3.22.

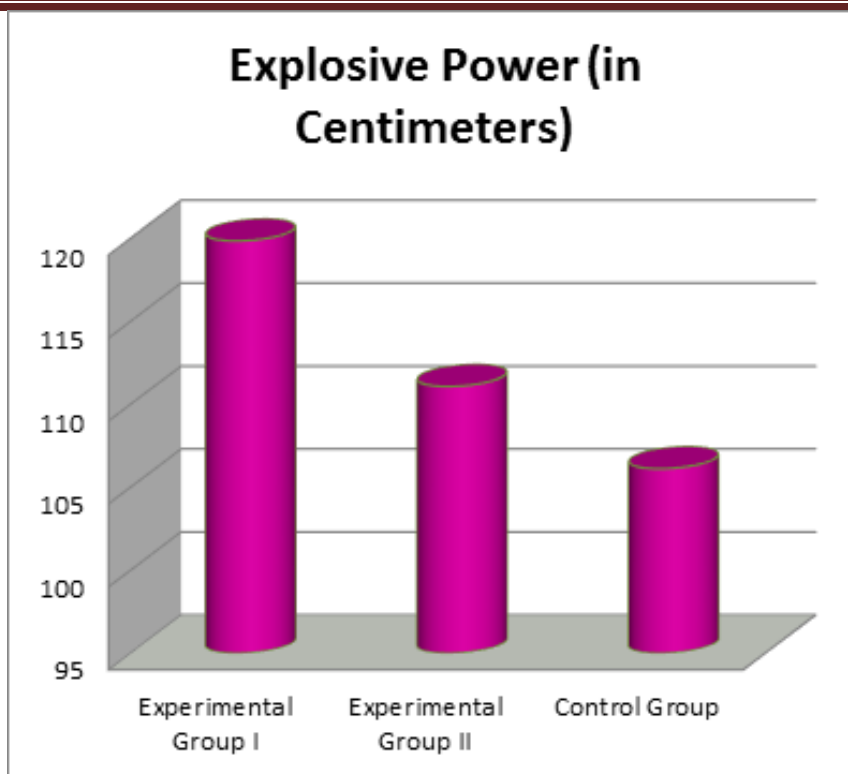


Fig 2. Adjusted mean values of explosive power of experimental group i, experimental group ii and control group

Table 03 shows the obtained 'F' values on pre test, post test and adjusted post – test means on balance of Minor games training experimental group I, experimental group II and control group.

The pre test means on balance were 11.93, 11.00 and 11.26 respectively. The 'F' value observed for the pre – test on balance was 0.16. It fails to reach the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Based on the results it was confirmed that the mean differences among the groups of Minor games training experimental group I, experimental group II and control group on balance before the start of the respective treatments were found to be insignificant.

The post test means on balance of Minor games experimental group I, experimental group II and control group were 17.33,

15.2 and 19.93 respectively. The 'F' value observed for the post test on balance was 4.41. It was greater than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F-value on post test means among the groups namely Minor games training experimental group I, experimental group II and control group on balance was highly significant as the value was higher than required table value of 3.21. Thus the results obtained proved that the training on balance produced significant improvements among the experimental groups.

The adjusted post test means on balance of Minor games training experimental group I, experimental group II and control group were 16.81, 15.58 and 12.06 respectively. The 'F' value observed for the post test on balance was 16.77. It was greater than the

table value of 3.16 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on adjusted post test means among the groups

Namely Minor games training experimental group I, experimental group

II and control group on balance was highly significant as the value was higher than required table value of 3.21. Thus the results obtained proved that the training on balance produced significant improvements among the experimental groups.

Table 4. Analysis of covariance among Minor games training experimental group I, experimental group II and control group on span of memory

	Minor games group I	Minor games group II	Control group	Source of variance	Sum of square	D .f	Mean square	F - value
Pre test mean	2.93	2.86	2.86	Between	0.04	2	0.02	0.03
				Within	26.4	42	0.62	
Post test mean	3.26	3.06	2.8	Between	1.64	2	0.82	1.7
				Within	20.26	42	8.48	
Adjusted post mean	3.23	3.08	2.81	Between	1.33	2	0.66	5.33*
				Within	5.11	41	0.124	

*Significant at 0.05 level of confidence

Required table value at 0.05 level of significant with d.f 2 and 42 is 3.21 and d.f 2 and 41 is 3.22.

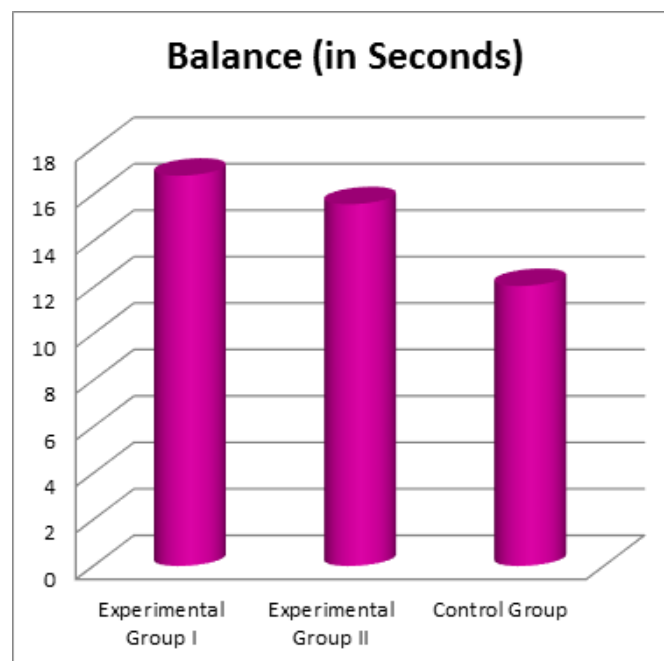


Fig 3. Adjusted mean values of balance of experimental group i, experimental group ii and control group

Table 15 shows the obtained 'F' values on pre test, post test and adjusted post test means on span of memory of Minor games training experimental group I, experimental group II and control group.

The pre test means on span of memory were 2.93, 2.86 and 2.86 respectively. The 'F' value observed for the pre – test on span of memory was 0.03. It fails to reach the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Based on the results it was confirmed that the mean differences among the groups of Minor games training experimental group I, experimental group II and control group on memory before the start of the respective treatments were found to be insignificant.

The post test means on span of memory of Minor games Experimental group I, experimental group II and control group were 3.26, 3.06 and 2.8 respectively. The 'F' value observed for the post – test on memory was 1.7. It was lesser than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on post test means among the groups namely Minor games

training experimental group I, experimental group II and control group on memory was not significant as the value was lesser than required table value of 3.21. Thus the results obtained proved that the training on memory produced no significant improvements among the experimental groups.

The adjusted post test means on memory of Minor games training group and control group were 3.23, 3.08 and 2.81 respectively.

The 'F' value observed for the adjusted post test on memory was 5.33. It was greater than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on adjusted post test means among the groups namely Minor games training experimental group I, experimental group II and control group on memory was highly significant as the value was higher than required table value of 3.21. Thus the results obtained proved that the training on memory produced significant improvements among the experimental groups.

Table 5. Analysis of covariance among Minor games training experimental group I, experimental group II and control group on span of attention

	Minor games group I	Minor games group II	Control group	Source of variance	Sum of square	D.f	Mean square	F – value
Pre test mean	2.53	2.46	2.8	Between	0.04	2	0.02	0.06
				Within	15.2	42	0.36	
Post test mean	2.86	2.66	2.46	Between	1.2	2	0.6	1.70
				Within	14.8	42	0.35	
Adjusted post mean	2.83	2.68	2.48	Between	0.92	2	0.46	2.86
				Within	6.64	41	0.16	

*Significant at 0.05 level of confidence

Required table value at 0.05 level of significant with d.f 2 and 42 is 3.21 and d.f 2 and 41 is 3.22.

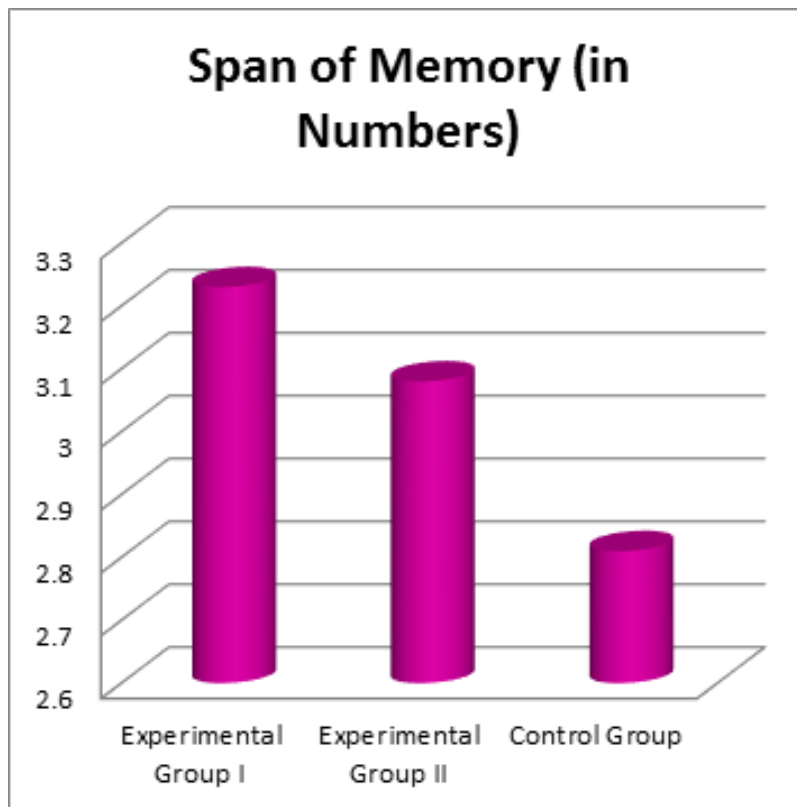


Fig 4. Adjusted mean values of span of memory of experimental group i, experimental group ii and control group

Table 17 shows the obtained 'F' values on pre test, post test and adjusted post test means on span of attention of Minor games training experimental group I, experimental group II and control group.

The pre test means on span of attention were 2.53, 2.46 and 2.8 respectively. The 'F' value observed for the pre test on span of attention was 0.06. It fails to reach the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Based on the results it was confirmed that the mean differences among the groups of Minor games training group and control group on attention before the start of the respective treatments were found to be insignificant.

The post test means on attention of Minor games groups and control group were 2.86, 2.66 and 2.46 respectively. The 'F'

value observed for the post test on attention was 1.70. It was lesser than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on post test means among the groups namely Minor games training experimental group I, experimental group II and control group on span of attention was not significant as the value was lesser than required table value of 3.21. Thus the results obtained proved that the training on span of attention produced insignificant improvements among the experimental groups.

The adjusted post test means on balance of Minor games training group and control group were 2.83, 2.68 and 2.48 respectively. The 'F' value observed for

the post – test on attention was 2.86. It was lesser than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on adjusted post test means among the groups namely Minor games training experimental group I, experimental group

II and control group on attention was not significant as the value was lesser than required table value of 3.21. Thus the results obtained proved that the training on attention produced insignificant improvements among the experimental groups.

Table 6. Analysis of covariance among Minor games training experimental group I, experimental group II and control group on reaction time

	Minor games group I	Minor games group II	Control group	Source of variance	Sum of square	D.f	Mean square	F – value
Pre test mean	0.42	0.41	0.40	Between	0.0019	2	0.00096	0.03
				Within	1.02	42	0.24	
Post test mean	0.38	.37	0.40	Between	0.008	2	0.004	0.18
				Within	0.99	42	0.02	
Adjusted post mean	0.37	0.37	0.41	Between	0.015	2	0.007	13.46*
				Within	0.023	41	0.0005	

*Significant at 0.05 level of confidence

Required table value at 0.05 level of significant with d.f 2 and 42 is 3.21 and d.f 2 and 41 is 3.22.

Table 18 shows the obtained ‘F’ values on pre test, post test and adjusted post test means on reaction time of Minor games training experimental group I, experimental group II and control group.

The pre test means on reaction time were 0.42, 0.41 and 0.40 respectively. The ‘F’ value observed for the pre – test on reaction time was 0.03. It fails to reach the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Based on the results it was confirmed that the mean differences among the groups of Minor games training experimental group I, experimental group II and control group on reaction time before the start of the

respective treatments were found to be insignificant.

The post test means on reaction time of Minor games training experimental group I, experimental group II and control group were 0.38, 0.37 and 0.40 respectively. The ‘F’ value observed for the post test on reaction time was 0.18. It was lesser than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on post test means among the group’s namely Minor games training group and control group on reaction time was not significant as the value was lesser than required table value of 3.21. Thus the results obtained proved that the training on reaction time produced

no significant improvements among the experimental groups.

The adjusted post test means on reaction time of Minor games training experimental group I, experimental group II and control group were 0.37, 0.37 and 0.41 respectively. The 'F' value observed for the adjusted post test on reaction time was 13.46. It was greater than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F-

value on post test means among the groups namely Minor games training experimental group I, experimental group II and control group on reaction time was highly significant as the value was higher than required table value of 3.21.

Thus the results obtained proved that the training on reaction time produced significant improvements among the experimental groups.

Table 7. Analysis of covariance among Minor games training experimental group I, experimental group II and control group on finger eye coordination.

	Minor games group I	Minor games group II	Control group	Source of variance	Sum of square	D.f	Mean square	F value
Pre test mean	17.66	17.53	17.46	Between	0.31	2	0.15	0.01
				Within	598.8	42	14.25	
Post test mean	20.13	19.6	17.26	Between	69.33	2	34.86	3.22
				Within	688.26	42	16.38	
Adjusted post mean	20.01	19.62	17.35	Between	61.67	2	30.83	39.83*
				Within	31.73	41	0.77	

*Significant at 0.05 level of confidence

Required table value at 0.05 level of significant with d.f 2 and 42 is 3.21 and d.f 2 and 41 is 3.22.

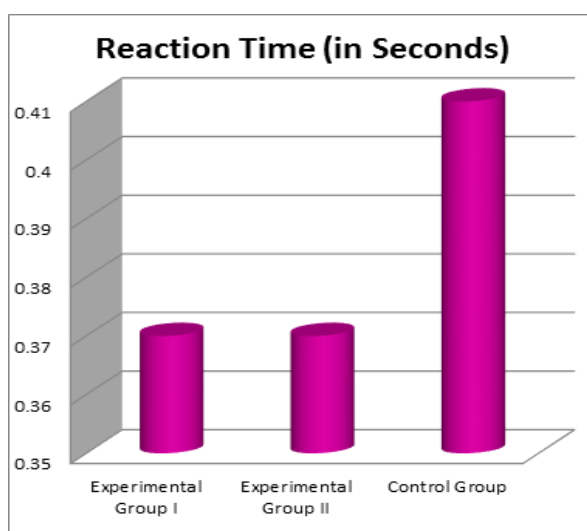


Fig 5. Adjusted mean values of reaction time of experimental Group i, experimental group ii and control group

Table 20 shows the obtained 'F' values on pre test, post test and adjusted post test means on finger eye coordination of Minor games training experimental group I, experimental group II and control group. The pre test means on finger eye coordination of these were 17.66, 17.53 and 17.46 respectively. The 'F' value observed for the pre test on finger eye coordination was 0.01. It fails to reach the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Based on the results it was confirmed that the mean differences among the groups of Minor games training experimental group I, experimental group II and control group on finger eye coordination before the start of the respective treatments were found to be insignificant.

The post means on finger eye coordination of Minor games groups and control group were 20.13, 19.6 and 17.26 respectively. The 'F' value observed for the post test on finger eye coordination was 2.12. It was lesser than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on post test means among the groups namely Minor games training experimental group I, experimental group II and control group on finger eye coordination was not

significant as the value was lesser than required table value of 3.21. Thus the results obtained proved that the training on finger eye coordination produced no significant improvements among the experimental groups.

The adjusted post test means on finger eye coordination of Minor games training experimental group I, experimental group II and control group were 20.01, 19.62 and 17.35 respectively. The 'F' value observed for the adjusted post – test on finger eye coordination was 39.83. It was greater than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on post test means among the groups namely Minor games training experimental group I, experimental group II and control group on finger eye coordination was highly significant as the value was higher than required table value of 3.21.

Thus the results obtained proved that the training on finger eye coordination produced significant improvements among the experimental groups.

Since significant differences were recorded, the scores were further subjected to statistical treatment using scheffe's post hoc test and the results were presented in the table

Table 8. Analysis of covariance among Minor games training experimental group I, experimental group II and control group on hand eye coordination

	Minor games group I	Minor games group II	Control group	Source of variance	Sum of square	D.f	Mean square	F – value
Pre test mean	1.8	1.73	1.66	Between	0.13	2	0.06	0.22
				Within	12.66	42	0.30	
Post test mean	1.73	2.66	2.33	Between	3.33	2	1.66	4.77*
				Within	14.66	42	0.34	

Adjusted post mean	2.62	2.33	2.03	Between	2.57	2	1.28	5.07*
				Within	10.42	41	0.25	

*Significant at 0.05 level of confidence

Required table value at 0.05 level of significant with d.f 2 and 42 is 3.21 and d.f 2 and 41 is 3.22.

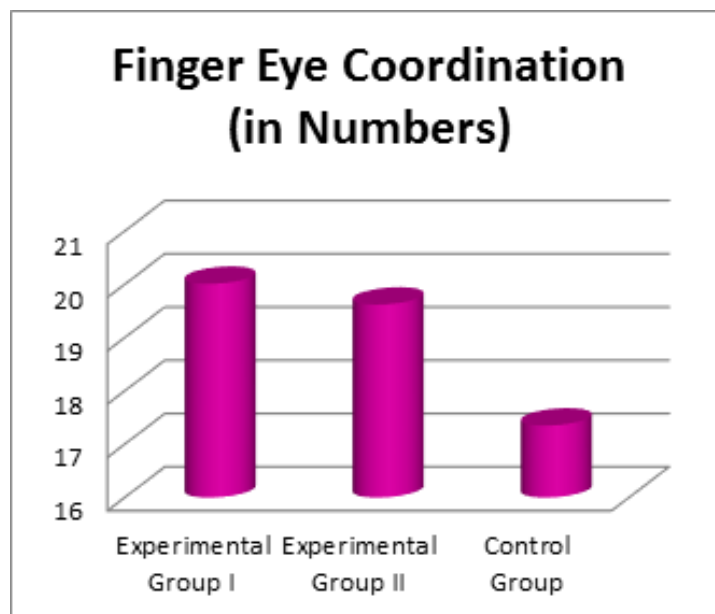


Fig 6. Adjusted mean values of finger eye coordination of experimental group i, experimental group ii and Control group

Table 22 shows the obtained ‘F’ values on pre test, post test and adjusted post test means on hand eye coordination of Minor games training experimental group I, experimental group II and control group.

The pre test means on hand eye coordination were 1.8, 1.73 and 1.66 respectively. The ‘F’ value observed for the pre test on hand eye coordination was 0.22. It fails to reach the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Based on the results it was confirmed that the mean differences among the groups of Minor games training experimental group I, experimental group II and control group on hand eye

coordination before the start of the respective treatments were found to be insignificant.

The post means on hand eye coordination of Minor games groups and control group were 1.73, 2.66 and 2.33 respectively. The ‘F’ value observed for the post – test on hand eye coordination was 4.77. It was greater than the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on post test means among the groups namely Minor games training experimental group I, experimental group II and control group on hand eye coordination was highly significant as the value was higher than

required table value of 3.21. Thus the results obtained proved that the training on hand eye coordination produced significant improvements among the experimental groups.

The adjusted post test means on balance of Minor games training group and control group were 2.62, 2.33 and 2.03 respectively. The 'F' value observed for the adjusted post – test on hand eye coordination was 5.07. It was greater than

the table value of 3.21 for degree of freedom 2, 43 at 0.05 level of confidence. Since the observed F- value on post test means among the group's namely Minor games training group and control group on hand eye coordination was highly significant as the value was higher than required table value of 3.21. Thus the results obtained proved that the training on hand eye coordination produced significant improvements among the experimental groups.

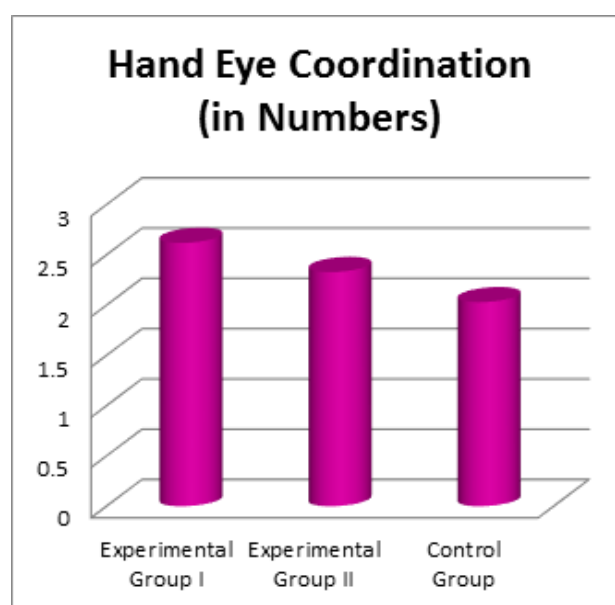


Fig 7. Adjusted mean values of hand eye coordination of experimental group i, experimental group ii and control group

Discussion and findings

The results of the present study indicate that all the Minor game training had influenced changes in the selected variables of flexibility, leg explosive power, balance, span of memory, span of attention, reaction time, finger eye coordination and hand eye coordination due to 12 weeks of training.

Conclusions

It was concluded that Minor game programme with normal partner significantly improved the selected fitness

variables: flexibility, explosive power jump and balance cognitive skills: span of memory and span of attention psychomotor abilities: hand eye coordination, finger eye co-ordination and reaction time among the experimental group I.

It was concluded that experimental group II had significantly improved in selected fitness variables: flexibility, leg explosive power and balance Psycho-motor skills: hand eye coordination, finger eye coordination and reaction time.

It was concluded that Minor game training experimental group I showed significant improvement better than Minor game training experimental group II in variables leg explosive power.

It was concluded that there was no significant difference between Minor game

training experimental group I and Minor game training experimental group II in flexibility, balance cognitive skills: span of memory and span of attention Psycho-motor skills: hand eye coordination, finger eye coordination and reaction time.

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