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Impact of Gross Motor Activities on the Physical Development of School Children

Varanasi Janardhana[1], Dr. S. Sethu[2*], Dr. P. Manikandan[3]

[1]Research Scholar, Department of Physical Education and Sports, Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu, India.
[2]Assistant Professor, Department of Physical Education and Sports, Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu, India.
[3]Assistant Professor (T), Department of Physical Education and Sports, Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu, India.

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ABSTRACT:
The purpose of the present study was to find out the impact of gross motor activities on the physical development of school children to achieve the purpose of the study, a total of twenty-four children (Boys) were selected randomly as participants from the Little Flower Matriculation School, Gandhi Nagar, Tirunelveli, Tamil Nadu. The selected children's age was ranged from 8 - 12 years. The selected participants were divided in to two groups namely gross motor activity group and control group. keeping in mind the opinion of the experts, availability of equipment's, acceptability of the participants and the time to be derived the following variables were selected namely Balance, Co-ordination and Reaction Time, the data were statistically analyzed with dependent "t" test and Analysis of Co-Variances (ANCOVA). In all the cases 0.05 levels will be fixed as level of confidence to test the hypotheses. There were a significant improvement takes place on balance ability due to the influence of six weeks gross motor skill training programme. There were a significant improvement takes place on co-ordination ability due to the influence of six weeks gross motor skill training programme. There were a significant improvement takes place on reaction time ability due to the influence of six weeks gross motor skill training programme. There was a significant difference exists between experimental and control groups on balance, co-ordination and reaction time ability among school children. However, the control group had not shown any significant improvement of any of the selected variables among school children.

Keywords
Gross Motor Activity, Balance, Co-ordination, Reaction Time.

1. Introduction

Gross motor skills are foundational abilities that involve the use of large muscle groups to perform movements such as walking, running, jumping, and climbing. These skills are crucial for children's overall development as they impact their physical health, cognitive growth, and social interactions. Engaging in gross motor activities helps children build strength, balance, and coordination by requiring the synchronization of various muscle groups. Activities like running, hopping, and climbing not only enhance muscle development but also improve cardiovascular fitness and spatial awareness. For instance, climbing on playground equipment challenges children to use their arms and legs in coordination, fostering upper body strength and balance. Similarly, activities such as throwing and catching balls help develop hand-eye coordination and fine-tune motor control. Beyond the physical benefits, gross motor activities play a significant role in cognitive development by encouraging problem-solving and spatial reasoning. For example, navigating an obstacle course requires children to plan their movements and understand their body's position in space. Socially, these activities often involve group play, promoting teamwork, communication, and turn-taking skills. Overall, integrating a variety of gross motor activities into daily routines not only supports physical health but also contributes to emotional well-being by providing opportunities for stress relief and self-expression. Thus, fostering an environment rich in diverse gross motor experiences is essential for nurturing well-rounded development in children.

Purpose of the Study
The purpose of the present study was to find out the impact of gross motor activities on the physical development of school children.

2. Methodology

Selection of Participants

To achieve the purpose of the study, a total of twenty-four children (Boys) were selected randomly as participants from the Little Flower Matriculation School, Gandhi Nagar, Tirunelveli, Tamil Nadu. The selected children's age was ranged from 8 - 12 years. The selected participants were divided in to two groups, Group One-12, Group Two – 12 members, totally 24 subjects were allotted, Gross motor & control group.

Selection of Variables

The research scholar reviewed the available scientific literature pertaining to the problem from books, journals, periodicals, e-resources, unpublished thesis and dissertation. Keeping in mind the opinion of the experts, availability of equipment's, acceptability of the participants and the time to be derived the following variables were selected namely:

1) Balance 2) Co-ordination 3) Reaction Time

Selection of Test

SI. No	Criterion of Variable	Name of the Test	Unit of Measurement
1	Balance	Stork balance stand test	seconds
2	Co-ordination	Alternate hand wall toss test	counts
3	Reaction time	Reaction time ruler drop test	seconds

Intra Class Coefficient of Correlation on Selected Variables

Sl. No	Variables	R –Value
1	Balance	0.89*
2	Co-ordination	0.92*
3	Reaction Time	0.90*

**Significant at 0.05 level of confidence.* Table value required for significance at 0.05 level of confidence df was 0.77.

Statistical Technique

The data were statistically analyzed with dependent "t" test and Analysis of Co-Variances (ANCOVA). In all the cases .05 levels will be fixed as level of confidence to test the hypotheses.

Analysis and Interpretation of the Data

Balance

The analysis of dependent-'t' test on the data obtained for balance of the pre-test and post-test means of experimental group and control group have been analyzed and presented in Table 1

Table – 1 Summary of Mean and Dependent-'t'-test for the Pre and Post tests on Balance of Experimental Group and Control Group

Tests		Pre-Test	Post Test	't' - Value
Experimental Group	Mean	6.35	7.89	11.97*
	SD	2.36	2.07	
Control Group	Mean	6.31	6.37	0.64
	SD	2.47	2.41	

*Significant at .05 level. The table value required for 0.05 level of significance with df 9 is 2.26.

The table 1 shows that the pre-test mean value of experimental group and control group are 6.35 and 6.31 respectively and the posttest means are 7.89 and 6.37 respectively. The obtained dependent t-ratio values between the pre and posttest means of experimental group and control group are 11.97 and 0.64 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained't' ratio value of experimental group are greater than the table value, it is understood that experimental group had significantly improved the balance. However, the control group has not improved significantly. The obtained-'t' value is less than the table value, as they were not subjected to any specific training.

Table 2 Analysis of Covariance on Balance of Experimental Group and Control Group

Adjusted Post Test Means		Source of Variance	Sum of Square	Df	Means Square	F-ratio
Experimental Group	Control Group					
8.03	6.41	Between	87.79	1	87.79	30.59*
		With in	48.79	17	2.87	

*Significant at .05 level. The table value required for significance at 0.05 level with df 1 and 17 is 4.45.

Table 2 shows that the adjusted posttest means of experimental group and control groups are 8.03 and 6.41 respectively. The obtained F-ratio value is 30.59 which were greater than the table value 4.45 with df 1 and 17 required for significance at 0.05 level. Since the value of F-ratio is greater than the table value, it indicates that there is a significant difference among the adjusted post-test means of experimental group and control groups.

Co-Ordination

The analysis of dependent-'t' test on the data obtained for Co-ordination of the pre-test and post-test means of experimental group and control group have been analyzed and presented in Table 3.

Table 3 Summary of Mean and Dependent-'t'-test for the Pre and Post tests on Co-ordination of Experimental Group and Control Group

Tests		Pre-Test	Post Test	't' - Value
Experimental Group	Mean	4.53	6.28	8.14*
	SD	2.01	1.87	
Control Group	Mean	4.55	5.57	1.06
	SD	2.26	2.34	

*Significant at .05 level. The table value required for 0.05 level of significance with df 9 is 2.26.

The table 3 shows that the pre-test mean value of experimental group and control group are 4.53 and 4.55 respectively and the posttest means are 6.28 and 5.57 respectively. The obtained dependent t-ratio values between the pre and posttest means of experimental group and control group are 8.14 and 1.06 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained-'t' ratio value of experimental group are greater than the table value, it is understood that experimental group had significantly improved the Co-ordination. However, the control group has not improved significantly. The obtained-'t' value is less than the table value, as they were not subjected to any specific training.

Table – 4 Analysis of covariance on Co-ordination of Experimental Group and Control Group

Adjusted Post Test Means		Source of Variance	Sum of Square	Df	Means Square	F-ratio
Experimental Group	Control Group					
6.32	5.59	Between	121.26	1	121.26	19.34*
		With in	106.59	17	6.27	

*Significant at .05 level. The table value required for significance at 0.05 level with df 1 and 17 is 4.45.

Table 4 shows that the adjusted posttest means of experimental group and control groups are 6.32 and 5.59 respectively. The obtained F-ratio value is 19.34 which were greater than the table value 4.45 with df 1 and 17 required for significance at 0.05 level. Since the value of F-ratio is greater than the table value, it indicates that there is a significant difference among the adjusted post-test means of experimental group and control groups.

Reaction Time

The analysis of dependent-'t' test on the data obtained for reaction time of the pre-test and post-test means of experimental group and control group have been analyzed and presented in Table

Table – 5 Summary of Mean and Dependent-'t'-test for the Pre and Post tests on Reaction Time of Experimental Group and Control Group

Tests		Pre-Test	Post Test	't' - Value
Experimental Group	Mean	17.32	15.61	14.91*
	SD	1.55	1.09	
Control Group	Mean	17.86	17.51	1.55
	SD	1.67	1.42	

*Significant at .05 level. The table value required for 0.05 level of significance with df 9 is 2.26.

The table 5 shows that the pre-test mean value of experimental group and control group are 17.32 and 17.86 respectively and the posttest means are 15.61 and 17.51 respectively. The obtained dependent t-ratio values between the pre and posttest means of experimental group and control group are 14.91 and 1.55 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained-'t' ratio value of experimental group are greater than the table value, it is understood that experimental group had significantly improved the reaction time. However, the control group has not improved significantly. The obtained-'t' value is less than the table value, as they were not subjected to any specific training.

Table 6 Analysis of covariance on Reaction Time of Experimental Group and Control Group

Adjusted Post Test Means		Source of Variance	Sum of Square	Df	Means Square	F-ratio
Experimental Group	Control Group					
15.57	17.49	Between	54.69	1	54.69	42.81*
		With in	22.78	17	1.34	

*Significant at .05 level. The table value required for significance at 0.05 level with df 1 and 17 is 4.45.

Table 6 shows that the adjusted posttest means of experimental group and control groups are 15.57 and 17.49 respectively. The obtained F-ratio value is 40.81 which were greater than the table value 4.45 with df 1 and 17 required for significance at 0.05 level. Since the value of F-ratio is greater than the table value, it indicates that there is a significant difference among the adjusted post-test means of experimental group and control groups.

Discussion

The study aimed to investigate the impact of gross motor activities on balance, coordination, and reaction time among school children. The findings indicated a significant improvement in these physical abilities as a result of the intervention. School children who engaged in gross motor activities demonstrated enhanced balance, better coordination, and quicker reaction times. These improvements highlight the effectiveness of motor skills training in fostering physical development.

Furthermore, when comparing the experimental group, which participated in the gross motor activities, with the control group, who did not, a clear distinction was observed. The experimental group showed greater advancements in balance, coordination, and reaction time compared to the control group. This outcome suggests that the intervention had a measurable and positive effect on the children's motor skills, surpassing any natural or incidental improvements that might have occurred in the control group.

These findings emphasize the role of structured physical activities in enhancing motor skills among school children, which can be beneficial for their overall physical development and performance in various physical tasks. The results support the integration of such activities in school programs to promote motor skills development in children.

3. Conclusions

From the results obtained, the following conclusions were drawn, There were a significant improvement takes place on balance ability due to the influence of six weeks gross motor skill activity programme. There were a significant improvement takes place on co-ordination ability due to the influence of six weeks gross motor activity programme. There were a significant improvement takes place on reaction time ability due to the influence of six weeks gross motor activity programme. There was a significant difference exists between experimental and control groups on balance, co-ordination and reaction time ability among school children. However, the control group had not shown any significant improvement of any of the selected variables among school children.

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