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# Evaluation of fundamental motor skills moderate retarded and non-retarded children

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**Abstract**
The purpose of the study was to evaluate the fundamental motor skills in children and young adult with Moderate Mental Retardation (MR). The present study also assessed the differences between boys and girls and among different age groups. The objective of the study was to determine the seven loco motor skills such as walking, running, jumping, throwing, kicking, agility and balance of moderate MR children and young adult with different age groups. Participants were n=90 students (45 boys and 45 girls) with moderate MR aged from 9 to 15 years old. The subjects attended special schools from St. Annes Convent and St. Bishop Sargent School for Mentally Retarded Children, Tirunelveli. Subjects were divided in three age groups (9-11, 12-13 & 14-15 years old). The Test of Gross Motor Development (TGMD, Ulrich, 1985) [10] was used for the assessment of the fundamental motor skills. The TGMD examines seven loco motor skills. Descriptive statistics and the two-way factorial (2x3) Analysis of variance (ANOVA) was used to evaluate the influence of the two categories of variables on the dependent variables. If the obtained 'F' ratio for interaction was significant, then the simple effect test was used to find out which of the mean performance score for gender and age groups were significant. The individual comparisons were made for the interpretations using the scheffes's test. The results indicated that there was a significant difference among age groups in the performance of fundamental motor skills for children and young adult boys and girls with moderate MR. Hence it is recommended that, adapted physical educators should emphasize in a special designed adapted physical education program towards the development of fundamental motor skills for the children with moderate mental retardation.

**Keywords:** Mental retardation (MR), moderate mr, motor skill, loco motor skill

## Introduction

Fundamental movement skill is an organized series of basic movements that involves the combination of movement patterns of two or more body segments which may be categorized as stability, locomotors or manipulative movement (Gallahue, 1996). For individual with mental retardation the most important benefit of fundamental motor skills development is in the area of functional skills. Competencies in those skills can carry over to the functional skills necessary to perform movements required in everyday living (Eichstaedt & Lavay, 1992) [3].

Proficiency in the performance of fundamental motor skills (FMS) has been considered to be an underlying factor for the success of the more complex movements used in aquatics, dance, games, and sports. However, "sports" is not the only domain where motor skills "mastery" is important. According to Eichstaedt and Lavay (1992) [3] competence in these skills carries over to functional skills necessary to perform movements required in daily living activities. Further, the continual failure to perform culturally normative skills within the range of acceptable proficiency may lead to serious secondary emotional and behavioral problems (Cratty, 1967) [2].

Mentally retarded children are less physically active and have fewer opportunities to practice motor skills than non-retarded children. Rarick's and Dobbins' (1972) [8] recent study reported significantly higher body fat content and lower physica1 fitness scores for the wide age-range of mentally retarded children that they measured. The over protectiveness of some parents and teachers of retarded children also contributes to the problem. An important time period in the development of motor skills is the pre-school years. A number of inherent factors limit the amount of motor practice opportunities available to the preschool mentally retarded child. Some of these factors are discussed in this article.

## Statement of The Problem

The purpose of the study was to compare the selected motor skills such as agility, static and dynamic balance between moderate retarded and non-retarded children.

## Methodology

The purpose of the study was to evaluate the fundamental motor skills in children and young adult with Moderate Mental Retardation (MR). The present study also assessed the differences between boys and girls and among different age groups. The objective of the study was to determine the seven loco motor skills such as walking, running, jumping, throwing, kicking, agility and balance of moderate MR children and young adult with different age groups. Participants were n=90 students (45 boys and 45 girls) with moderate MR aged from 9 to 15 years old. The subjects attended special schools from St. Annes Convent and St. Bishop Sargent School for Mentally Retarded Children, Tirunelveli. Subjects were divided in three age groups (9-11, 12-13 & 14-15 years old). The Test of Gross Motor Development (TGMD, Ulrich, 1985) [10] was used for the assessment of the fundamental motor skills. The TGMD examines seven loco motor skills. Descriptive statistics and the two- way factorial (2x3) Analysis of variance (ANOVA) was used to evaluate the influence of the two categories of variables on the dependent variables. If the obtained 'F' ratio for interaction was significant, then the simple effect test was used to find out which of the mean performance score for gender and age groups were significant. The individual comparisons were made for the interpretations

using the scheffes's test. The level of significance was fixed at .05 level. \

## Analysis and interpretations of data

**Table 1:** The mean and standard deviation on fundamental motor skills of moderate retarded boys and girls in three different age groups

| Groups | | 9 & 11 years | 12 & 13 years | 14 & 15 years |
|---|---|---|---|---|
| Boys | Mean | 45.07 | 50.6 | 59.4 |
| | SD | 2.54 | 3.65 | 4.52 |
| Girls | Mean | 40.4 | 43.87 | 46.53 |
| | SD | 2.58 | 3.85 | 6.25 |

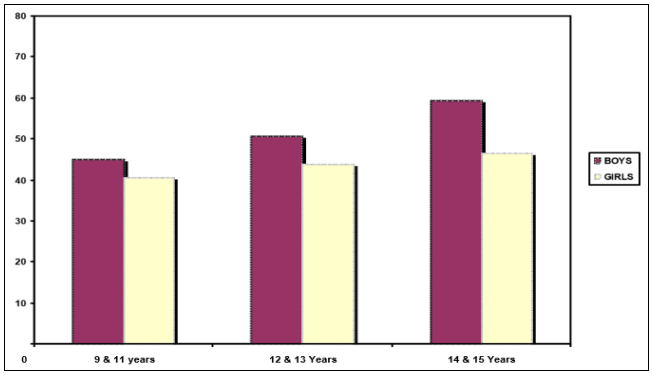


**Fig 1:** Mean Scores of Moderate Mr Boys and Girls in Different Age Groups on Fundametnal Motor Skills

**Table 2:** Two-Factor Anova On Fundamental Motor Skills of Moderate Mr Boys and Girls in Different Age Groups

| Source of Variance | Sum of Squares | df | Mean Squares | Obtained F- ratio |
|---|---|---|---|---|
| A factor (Gender) | 1472.17 | 1 | 1472.17 | 37.41* |
| B factor (Age Groups) | 1578.42 | 2 | 789.21 | 20.06* |
| AB factor (Interaction) (Gender and Age) | 272.82 | 2 | 136.41 | 3.47* |
| Error I | 3305.2 | 84 | 39.348 | |

*Significant at .05 level. (Table values required for significance at 0.05 level with df 1and 84 & 2 and 84 are 3.95 and 3.10 respectively.)

**Table 3:** The Simple Effect Test Scores of Gender (Rows) And Three Age Groups (Columns) On Fundamental Motor Skills

| Source of Variance | Sum of Squares | df | Mean Squares | Obtained F ratio |
|---|---|---|---|---|
| Gender and 9 & 11 years | 163.33 | 1 | 163.33 | 4.15* |
| Gender and 12 & 13 years | 340.03 | 1 | 340.03 | 8.65* |
| Gender and 14 & 15 years | 1241.63 | 1 | 1241.63 | 31.55* |
| Age groups and Boys | 1567.51 | 2 | 783.75 | 19.92* |
| Age groups and Girls | 283.73 | 2 | 141.87 | 3.60* |
| Error | 3305.2 | 84 | 39.35 | |

* Significant at 0.05 level of confidence.
(Table values required for significance at .05 level with df 1 and 84 & 2 and 84 are 3.95 and 3.10 respectively.)

**Table 4:** The Scheffe's Test for Difference Between Paired Means of Moderate Mr Boys in Different Age Grouups On Fundamental Motor Skills

| Adjusted Post Test Means | | | Mean Difference | Confidence Intervals |
|---|---|---|---|---|
| 9 & 11 years | 12 &13 years | 14 & 15 years | | |
| 45.07 | 50.6 | | 5.53 | 6.44 |
| 45.07 | | 59.4 | 14.33 | 6.44 |
| | 50.6 | 59.4 | 8.8 | 6.44 |

* Significant at.05 level

**Table 5:** The Scheffe's Test for Difference Between Paired Means of Moderate Mr Girls in Different Age Grouups On Fundamental Motor Skills

| Adjusted Post Test Means | | | Mean Difference | Confidence Intervals |
|---|---|---|---|---|
| 9&11 years | 12 &13 years | 14 & 15 years | | |
| 40.4 | 43.87 | | 3.47 | 6.44 |
| 40.4 | | 46.53 | 6.13 | 6.44 |
| | 43.87 | 46.53 | 2.66 | 6.44 |

* Significant at.05 level

## Results and Discussion on Findings

The results of ANOVA indicated that, there was a significant difference among the paired means of factor A (gender), factor B (age groups) and in the interaction effect (between A and B) on fundamental motor skills. Since the interaction effect is a significant, the simple effect test is applied as follow-up test.

The results of Simple Effect indicate that, there was a significant difference between the paired means of gender and 9&11 years gender and 12&13 years gender and 14 &15 years on fundamental motor skills. And also, there was a significant difference between the paired means of age groups & boys, and age groups & girls on fundamental motor skills. As two gender groups and three age groups are compared and the obtained F- ratio value is found to be significant in the simple effect for columns, the scheffe's test was applied as post hoc test to find out the paired means difference.

The scheffe's result indicated that, there was a significant difference in fundamental motor skills between the paired means of 9&11 and12&13, 9&11 and 14&15 and 12&13 and 14&15 years boys and girls. However, the fundamental

motor skill was significant higher for 14&15 years age group boys than 9&11 and 12&13 years age group boys and girls.

Many of the previous research has supported changes in qualitative performance as age increases in children with MR. The moderately mentally retarded are markedly inferior in physical fitness and gross-motor performance when compared to their higher age group counterparts. Some studies have indicated that girls are two to four years behind in most motor tasks (Rarick & Dobbins, 1972., Rariek, Widdop & Broadhead, 1970) [8, 9].

The lower the intelligence level or mental age, the greater are the motor proficiency deficits of the retarded (Cantor & Stacey, 1951) [1]. The cognitive demands of a motor task increase with task Complexity and, as the complexity of a task increases, the motor performance of the moderately retarded decrease (Fait & Kupferor, 1956., Groden, 1969) [4, 6]. Greater intra individual variability and wider individual differences are found in retardate motor performance scores than in the population at large (Rarick &Dobbins, 1972) [8] and the mentally retarded are especially sensitive to motivational factors in their motor performance efforts (Levy Joseph, 1974) [7]. Rarick's and Dobbins (1972) [8] recent study reported significantly higher body fat content and lower physica1 fitness scores for the wide agerange of mentally retarded children that they measured.

From the result of the study and also inferred from the above literature, this study concluded that, as age increases, quality in performance in fundamental motor skills does improve for children and young adult with moderate MR. These results may be due to the presence of specific curriculum programs, in special schools, with emphasize in the improvement of those skills.

Hence this study strongly recommended that, though pre-school years are an important time period in the development of motor skills. We should make a greater number of opportunities for the MR children to practice the motor skills schools. Also adapted physical educators should emphasize in a special designed and separate adapted physical education program towards the development of fundamental motor skills for the lower and higher age group children with moderate mental retardation.

## Conclusions

1. There was a significant difference exist among the three different age groups and between Moderate MR boys and girls on fundamental motor skills.
2. It was found that 16- & 17-years boys' groups were better in fundamental motor skills than other age groups.
3. Boys were dominating when compared to the girls in three different age groups on fundamental motor skills.

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