Chapter V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The main purpose of the study was to find out the effects of adapted physical education programme on motor performance and fitness status of educable and trainable mentally regarded children.

The subjects for the study were randomly selected on the basis of Stanford - Binnet Intelligence Test scores obtained from the school records. There were sixty educable mentally retarded (EMR) children and 46 trainable mentally retarded (TMR) children from Rotary Institute for Mental Retardation, Trivandrum, Kerala.

The sixty subjects of educable mentally retarded children ranged in age from eight to twelve years. They were randomly assigned into control group (EMR) \((N = 30)\), which included 21 boys and 9 girls (Mean Age = 10.28). The experimental group (EMR) \((N = 30)\) included 22 boys and 8 girls (Mean Age = 10.19). The same procedure was adopted in classifying 46 subjects of trainable mentally retarded children who ranged in age from eight to twelve years. The control group (TMR) \((N = 23)\) included 16 boys and 7 girls (Mean Age = 10.70). The experimental group (TMR) \((N = 23)\) included 18 boys and 5 girls (Mean Age = 10.22)
years). The IQ as measured by Stanford - Binnet Intelligence Test of EMR subjects ranged between 57 to 68 and the IQ of TMR subjects ranged between 38 and 51.

The experimental design used for the study was random group design. The subjects were classified randomly into two groups namely Group A (EMR - control), and Group B (EMR - Experimental) for educable mentally retarded children and similarly trainable mentally retarded children were also divided into two groups, namely Group C (TMR - control) and Group D (TMR Experimental). The pre tests were administered before the experimental treatment and all the groups were post tested on the criterion variables at the conclusion of the experimental period.

The test items chosen as criterion measures were found to be most reliable and are widely used all over the world for assessing motor ability, particularly for mentally retarded. The following motor performance tests were selected from Bruininks-Oseretsky Test of Motor Proficiency. The test items were: Running Speed and Agility, Balance (Standing on Preferred Leg on Balance Beam, Walking Forward Heel to Toe on Balance Beam), Bilateral Coordination (Tapping Feet Alternately While Making Circles with Fingers, Jumping Up and Clapping Hands), Upper-Limb Coordination (Catching a Tossed Ball with Both Hands, Throwing a Ball at a Target with Preferred Hand) and Response Speed.
The selected fitness status variables were: Right Hand Grip Strength, Left Hand Grip Strength, Modified Sit and Reach Test, Sit Up and Standing Broad Jump.

The reliability of data was ensured by establishing the instrumentation reliability, tester reliability, reliability of selected tests and subjects reliability.

Through the review of literature and promising practises in the field, and also with the help of the instructional resource materials, the investigator developed a draft of 12 weeks adapted physical education programme. The developed programme was examined initially by five experts and on the basis of their suggestions, and recommendations, the necessary and desirable changes and modifications were made. Once again the revised programme was sent to the experts for their final approval and comments. On the basis of feedback received from the experts a final draft of the programme was developed and administered on experimental groups.

The adapted physical education programme was implemented for a period of 12 weeks excluding the period utilized for initial and final testing of criterion variables.

The prescribed 12 weeks adapted physical education programme schedule was applied to the two experimental groups by the research scholar. At the same time the control group
spent the same amount of time in participating free play and other teacher directed recreational activities.

The programme was implemented on the experimental groups for 12 weeks during the regular school hours for a period of 50 minutes per day, five days per week. The step method of increasing load on the basis of principle of progression of load was used to create stronger stimulus to the organism for physiological adaptation of various systems of the body.

Analysis of Covariance (ANCOVA) was computed for each variable to determine the effect of 12 weeks adapted physical education programme on educable and trainable mentally retarded children. The level of significance to check the 'F' ratio obtained by ANCOVA was set at .05. In using Analysis of Covariance (ANCOVA) a value of 4.03 was required for significance at the .05 level of confidence for 58 degrees of freedom for educable mentally retarded. Similarly a value of 4.06 was required for significance at the .05 level of confidence for 44 degrees of freedom for trainable mentally retarded.

In as much as only two groups were employed in the experiment the 'F' ratio was adequate as the test of significance between final adjusted means; consequently an application of one of the post-hoc test was not applied.
The result of ANCOVA indicates that there were significant effect of 12 weeks adapted physical education programme on all motor performance variables of experimental groups of educable mentally retarded children, since obtained value of F-ratio for Running Speed and Agility (21.911), Standing on Preferred Leg on Balance Beam (6.083), Walking Forward Heel to Toe on Balance Beam (5.814), Tapping Feet Alternately While Making Circles with Fingers (5.705), Jumping Up and Clapping Hands (4.199), Catching a Tossed Ball with Both Hands (8.359), Throwing a Ball at a Target with Preferred Hand (16.353) and Response Speed (6.120) were greater than the 'F' table value of 4.03 required to be significant at .05 level with 1, 58 degrees of freedom.

The results of Analysis of Covariance indicates that there was significant effect of 12 weeks adapted physical education programme on Running Speed and Agility of experimental groups of trainable mentally retarded children. The obtained value of F-ratio 4.725 was greater than 'F' table value of 4.06 required to be significant at .05 level with 1, 44 degrees of freedom.

However, the adapted physical education programme of 12 weeks duration was not found to be effective on other motor performance variables since no significant difference were obtained between the mean values of trainable mentally retarded subjects of experimental and control groups.
The pre and post-test scores analysed by ANCOVA revealed that there were significant effect on all fitness status variables of experimental group of educable mentally retarded children due to the implementation of 12 weeks adapted physical education programme. The obtained values of 'F' ratio for Right Hand Grip Strength (17.685), Left Hand Grip Strenth (7.494), Modified Sit and Reach Test (20.476), Sit Up (15.668) and Standing Broad Jump (19.070) were greater than the F-ratio (4.03) required to be significant at .05 level with 1, 58 degrees of freedom.

Similar results were also obtained from the analysis of pre and post test scores of experimental and control groups of trainable mentally retarded children. The results shows that there were significant effects on all fitness variables of experimental group of trainable mentally regarded children due to the implementation of 12 weeks adapted physical education programme. The obtained values of F-ratio for Right Hand Grip Strength (5.098), Left Hand Grip Strength (4.669), Modified Sit and Reach Test (6.157), Sit Up (13.960) and Standing Broad Jump (4.925) were greater than the F-ratio (4.06) required to be significant at .05 level with 1, 44 degrees of freedom.

The findings of the study indicated that all the motor performance variables of the experimental group of educable mentally retarded children improved significantly due to the implementation of 12 weeks adapted physical education programme.
In the case of trainable mentally retarded children the significant effect of 12 weeks adapted physical education programme was found only in Running Speed and Agility. On all the other motor performance variables of trainable mentally retarded children, no significant difference was obtained between the mean values of control and experimental groups.

The findings further revealed that the fitness status variables of experimental groups of educable and trainable mentally retarded children improved significantly due to the implementation of 12 weeks adapted physical education programme.

**Conclusions**

Within the limitations of the present study and on the basis of the findings, the following conclusions may be drawn:

1. The 12 weeks adapted physical education programme significantly contributes to the improvement of motor performance of educable mentally retarded children.

2. The 12 weeks adapted physical education programme significantly brings out improvement in the Running Speed and Agility of trainable mentally retarded children.

3. The motor performance variables such as Balance, Bilateral Coordination, Upper-Limb Coordination, and Response Speed can not be significantly improved within 12 weeks of training
of adapted physical education programme in the case of trainable mentally retarded children.

4. The adapted physical education programme of 12 weeks be duration can significantly improve the fitness status among educable mentally retarded children.

5. The adapted physical education programme of 12 weeks duration can significantly improve the fitness status among trainable mentally retarded children.

**Recommendations**

In the light of the conclusions drawn, the following recommendations are made:

1. The 12 weeks adapted physical education programme developed by the investigator can be used to develop the motor performance of educable mentally retarded children ranging in age from eight to twelve years.

2. The 12 weeks adapted physical education programme developed by the investigator can be used effectively to develop the Running Speed and Agility of trainable mentally retarded children ranging in age from eight to twelve years.

3. The 12 weeks adapted physical education programme developed by the investigator can be used to develop the motor performance of trainable mentally retarded children with smaller
gap between the instructional steps than this programme.

4. The 12 weeks adapted physical education programme developed by the investigator can be effectively used to develop the fitness status of educable mentally retarded children ranging in age eight to twelve years.

5. The 12 weeks adapted physical education programme developed by the investigator can be effectively used to develop the fitness status of trainable mentally retarded children ranging in age from eight to twelve years.

6. It is recommended that good adapted physical education programme should be provided for facilitating development in mentally retarded children because they have inherent delays in physical and motor development.

7. Adequately professionally prepared adapted physical education teachers are to be placed in the special school system of this country to deliver quality assured physical education to mentally retarded children.

8. Regulations should be made to ensure that the adapted physical education programme is an integral part of the special education curricula.

9. It is also recommended that the Government should implement regulations to ensure a comprehensive service delivery
system in physical education to identify the problems of mentally retarded children in physical and motor fitness, sports skills and games.

10. It is recommended that special courses should be offered by universities for preparing professionals with skills to adequately teach or lead recreation for mentally retarded.

11. More research studies may be conducted in educable and trainable mentally retarded children with lower skill levels and smaller gap between the instructional steps than this programme.

12. It is also recommended that the present study may be replicated for longer than 12 weeks duration and with larger sample sizes.