CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The purpose of the study was to evaluate the effect of minor games in psychological, physiological variable and physical fitness of deaf student’s. The study focuses on the students’ physical fitness development and mental stability which strengthens their confidence of personality development.

There were 104 participants in this study and among them 68 participants were boys and 36 participants were girls. Both subjects were classified randomly into four groups; group-A and B were the experimental and control groups for boys and group-C and D were that of the girls. 34 boys in group A and 18 girls in group C (experimental group) underwent the minor game programme. The remaining boys (34 nos.) and girls (18 nos.) consists the control group. The pre-tests were administered to the experimental group before the application of the experimental treatment and were post tested on the criterion variables at the termination of the experimental period.

The criterion variables are:-

*Psychological variables: *Anxiety and Depression

*Physiological variable: *VO$_2$max

*Physical variables: *Sit-ups, 50 meter dash, Shuttle run, Standing broad jump, Pull-ups and 600 meter run/walk

The selected minor game programme was implemented for a period of twelve weeks excluding initial and final testing of criterion variables.
The test items chosen as criterion measures were found to be most reliable and are widely used all over the world for assessing components such as Depression, Anxiety, VO₂max, Abdominal muscles strength and endurance, Speed, Agility, Explosive power of leg extensor muscles, Arm and Shoulder girdle strength and endurance and Cardio respiratory endurance particularly in students.

The following tools were selected, for Depression - Children’s Depression Inventory (CDI), for Anxiety - State-Trait Anxiety Inventory (STAI), for VO₂max - Multi-Stage Fitness Test (MSFT), for Abdominal muscles strength and endurance - Sit-up (Flexed Leg- 60 seconds), for Speed - 50 meter dash, for Agility - Shuttle run, for Explosive power of leg extensor muscles - Standing board jump, for Arm and shoulder girdle strength and endurance - Pull-ups and for Cardio respiratory endurance – 600 meter run/walk.

Through the review of literature and promising practices in the field, and also with the help of the instructional resource materials, the investigator administered a twelve week selected minor game programme on the experimental group. At the same time, the control group spent the time in their daily routines.

The programme was implemented on the experimental group for twelve weeks after the regular school hours for a period of one hour per day, five days per week. The step/linear 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.
Multivariate Analysis of Covariance (MANCOVA) and Analysis of covariance (ANCOVA) were computed for each variable to determine the effect of twelve weeks selected minor game programme on deaf students. The adjusted post-test means were computed by ANCOVA. The level of significance to check the F-ratio obtained by ANCOVA was set at .05 level.

The pre and post – test scores analyzed by MANCOVA and ANCOVA revealed that there were significant effects on the psychological status variables of experimental group of deaf students due to the implementation of twelve weeks selected minor game programme.

The results shows that the psychological variables such as depression of girls was \( p = .000 \) (\( F = 24.429 \)) and that of boys was \( p = .000 \) (\( F = 13.799 \)). Anxiety of girls was \( p = .000 \) (\( F = 16.935 \)) and of boys was \( p = .000 \) (\( F = 33.469 \)) significant at .05 level.

The result shows that the physiological variable like \( VO_2 \text{max} \) of girls was \( p = .000 \) (\( F = 34.106 \)) and of boys \( p = .002 \) (\( F = 10.780 \)) significant at .05 level.

The results shows that the physical fitness variables such as 600 meter run/walk of girls was \( p = .000 \) (\( F = 16.551 \)) and boys was \( p = .003 \) (\( F = 9.227 \)), Standing board jump of girls was \( p = .000 \) (\( F = 15.302 \)) and boys was \( p = .000 \) (\( F = 153.966 \)), Pull- ups/flexed arm hang of girls was \( p = .002 \) (\( F = 10.832 \)) and boys was \( p = .002 \) (\( F = 9.999 \)), Sit-ups of girls was \( p = .000 \) (\( F = 43.408 \)) and boys was \( p = .000 \) (\( F = 19.083 \)), Shuttle run of girls was \( p = .000 \) (\( F = 21.128 \)) and boys was \( p = .000 \) (\( F = 100.712 \)), 50 meter dash of girls was \( p = .000 \) (\( F = 22.659 \)) and boys was \( p = .002 \) (\( F = 10.681 \)) significant at .05 level.
It can be highlighted that there is a cyclic effect of exercise/games on the body and mind. As the amount of physical activity increases, the amount of oxygen intake also proportionally increases. One particular system of the body that benefits tremendously from exercise is the cardiovascular and the respiratory system. Physical activities improve the cardiovascular system's ability to improve its VO$_2$max and which in turn has notable positive effects on the mood and psychological factors shown as decrease in anxiety and depression.

Thus these findings exposed that the fitness status, including psychological, physiological and physical fitness variables of deaf students improved significantly due to the implementation of the twelve weeks minor game programme.

**Conclusions**

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

Primarily this study confirms prior research in showing that minor game programme is an effective method for reducing depression and anxiety. This conclusion, in regards to this study, can be applied to deaf students.

Secondly physical activity is a form of physical stress, and it is hypothesized that the improved mood experienced following exercise is due to the increased endorphin levels. These results, however, have been generalized across all populations in prior research (Thoren et al., 1990, Bartholomew & Linder, 1998). Another physiological theory for the activity/mood relationship postulates that it is the elevated body temperature experienced during exercise that impacts the resulting mood.
Thirdly, the study also showed that minor games increase \( \text{VO}_2\text{max} \), and that the increase was relatively larger after minor game programme in the experimental group than the control group.

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Fourthly, the study also showed that minor games increase different physical fitness variables that the increase was relatively larger after minor game programme in the experimental group than the control group.

While doing activities (games), there is a significant improvement in the cardio-respiratory endurance profile, muscular strength etc. of the body. During activities, your heart rate shoots up, but over time, as your fitness level improves, your heart begins to work more efficiently. As a result, your resting heart rate between sessions eventually becomes slower. Improved heart and lung function due to regular aerobic activity are often associated with a greater sense of overall well-being, which can help offset feelings of anxiety.

Finally, the study showed that there is a cyclic correlation between the various physical fitness, physiological and psychological variables, as mentioned above.
In short, the following conclusions may be drawn from the study on basis of the findings:

1. The depression and anxiety levels were significantly decreased after twelve weeks of minor game programme in deaf students.

2. The VO$_2$max level was significantly increased after twelve weeks of minor game programme in deaf students.

3. The 600 meter run/walk result showed a significant improvement in the cardiovascular endurance after twelve weeks of minor game programme in deaf students.

4. The Standing broad jump result showed a notable improvement in the explosive strength after twelve weeks of minor game programme in deaf students.

5. The Pull-ups result showed a significant improvement in the shoulder girdle strength and endurance after twelve weeks of minor game programme in deaf students.

6. The Sit-ups result showed a significant improvement in the abdomen strength and endurance after twelve weeks of minor game programme in deaf students.

7. The 4×10 meter shuttle run result showed a significant improvement in the agility after twelve weeks of minor game programme in deaf students.

8. The 50 meter dash result showed a noteworthy improvement in explosive speed after twelve weeks of minor game programme in deaf students.

**Recommendations for further implications**

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

1. The present study shows that there was a significant decrease in the depression and anxiety level due to influence of twelve week minor game programme. Hence
minor game programme could be included as one of the recreational methods to reduce the level of depression and anxiety in deaf students.

2. The present study shows that there was a significant increase in VO$_2$max used and hence improvement of cardio-respiratory strength of the body during the minor game programme and thus minor games can be used as an effective way to increase the cardio-respiratory strength among students.

3. The present study shows that there was a significant increase in physical fitness and strength due to influence of twelve week minor game programme. Hence minor game programme could be included as one of the fitness methods in deaf students.

4. It can be highlighted that physical fitness, mental health and personality development in deaf students can be promoted through fun and recreation.

5. As a result of the minor game programme, there is development of the mind (i.e. better focus, attention, calmness etc.) and mood in the deaf students and hence this programme can be used effectively to increase their academic performance.

6. Minor games can help in the organic, neuro-muscular, emotional and interpretive development of the deaf student.

7. It is recommended that special courses should be offered by universities for preparing professional with skills to adequately teach or lead recreation for challenged students.

8. Regulation should be made to ensure that the adapted physical education teachers are to be placed in the special school system of this country to deliver quality assured physical education to deaf students.
9. The selected minor game programme can be used to develop psychological, physiological and physical fitness status of deaf students through fun and recreation.

10. Regulation should be made to ensure that the minor game programme is an integral part of special education curriculum.