Chapter V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

A growing child passes through various stages of growth and development which are predetermined. It is well known that, the growth is the result of continuous action of several environmental factors on the human genetic potentials.

The time of growth and development in children is a period during which physical and physiological changes takes place. The differences in these aspects can stem from multifarious influences of varied factors interacting in complex coordination. Hereditary factors which cannot be controlled, are found interacting with all pervasive environmental factors.

The present study is an attempt in this direction, where the investigation was carried out to explore the knowledge pertaining to the influences of natural environment, which facilitates the variation in physical and physiological variables, that may exists among the growing children who are the natives of different geographical conditions of Karnataka state, namely, Northern maidan, Southern maidan, Malnad region and Coastal plain.

Understanding the qualitative differences in the development of physical and physiological variables among the children belonging to these different geographical conditions of Karnataka state helps the professionals in the field
of physical education and sports in many ways. This knowledge serves the most basic and vital information for all practical purposes of physical education and sports profession right from the talent identification, diagnostic approaches, formulation and implementation of training programmes and so on.

The present study was conducted on 1200 male subjects from various educational institutions, 12 to 16 years of age, who were the natives of the four physiographic regions of Karnataka State. A sample consisting of 60 subjects belonging to each age group was taken from four different geographical regions, thus adding to a total of 240 in each age group.

The physical variables performances were assessed by testing two physical development, namely, height and body weight; and four motor performance variables, namely, speed ability by administering the 30 M. run with 15 M. flying start test; the explosive strength by vertical jump test, the agility by administering the 6 x 10 M. shuttle run test; and the flexibility by modified sit and reach test. The physiological variables, namely, the relative and absolute maximal oxygen uptake capacities were measured by administering 20 Metre shuttle run test with one minute stages. The values of relative and absolute VO₂ Max. were predicted by the computation of the results of 20 metre shuttle run test.

The selected physical and physiological variables test performances of the subjects belonging to four physiographic regions of Karnataka state were
compared for significance of difference by using one-way analysis of variance (ANOVA) followed by Least Significant Difference (LSD) Post-Hoc test to determine the significance difference between the paired means wherever necessary. Mean and standard deviations were also computed to assess the developmental patterns in the selected physical and physiological variables. The hypothesis was tested at 0.05 level of significance.

The overall analysis of physical development, namely, height and weight of the samples show that, at 12 and 13 years age, the Southern maidan and Malnad boys were found to be superior. The Coastal plain boys achieved their supremacy from 14 years to 16 years of age. The Northern maidan boys were found to be inferior in physical development from 12 to 16 years of age.

The findings pertaining to the selected motor performance variables such as speed, explosive strength, agility and flexibility revealed the following results.

In the case of speed performance, the Coastal plain and Malnad regions boys were found superior. The Southern maidan boys were found to be mediocre, whereas the Northern maidan boys were found to be inferior among the four groups.

In case of explosive strength, the Coastal plain boys were found to be incomparable except in the age of 12 years where Southern maidan boys exhibited superior explosive strength performance and continued as mediocre group. The
Malnad boys were found to be the second to Coastal plain, whereas the Northern maidan boys were found to be poorest in the explosive strength from 12 to 16 years.

In case of agility, the Coastal plain boys were found to be incomparable and exhibited their supremacy in the age group of 12, 13 and 15 years and followed by Malnad and Southern maidan boys in the order of performance. The Northern maidan boys were poorest in agility performance from 12 to 16 years of age group.

In the case of flexibility, there was no significant differences were found among the boys of 12 to 16 years of age group belonging to four different physiographic regions of Karnataka state.

In the case of relative VO$_2$ Max. at 12 years of age, the Coastal plain boys were found to be superior in 12, 13, and 15 years of age. The Malnad boys were found to be superior in the age of 14 years, otherwise remained second among the four regions. The Southern maidan boys were found to be mediocre, whereas the Northern maidan boys were the poorest in relative VO$_2$ Max. from 12 to 16 years of age.

In the case of absolute VO$_2$ Max. at the age of 12 and 13 years of age, the Southern maidan boys were found superior and were closely followed by Malnad region boys. At the age of 14 years, the Coastal plain boys spurted
rapidly to attain the top rank among the four groups and continued to be the best till 16 years. The Northern maidan boys were found to be the lowest in absolute VO₂ Max. from 12 to 16 years of age.

Conclusions

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

1. The Southern maidan and Malnad region boys have shown better values of height and weight at the age of 12 and 13 years of age. The Coastal plain boys at the age of 14, 15 and 16 years have shown spurt in attainment of height and body weight, and exhibited the best values of physical development. Northern maidan boys were found to be inferior in physical developments from 12 to 16 years.

2. In the case of speed performance, the Coastal plain boys have exhibited a superior speed performance at 12, 13 and 14 years. The Malnad regions boys closely followed the trend of Coastal plain boys till 14 years and surpassed them at 15 and 16 years. The Southern maidan boys were found to be mediocre whereas the Northern maidan boys were found to be inferior among the four groups.

3. In case of explosive strength, the Coastal plain boys were found to be superior from 13 to 16 years of age. The Malnad region boys stood
second. The Southern maidan boys exhibited best explosive strength ability at 12 years, but later on, there performance was just mediocre. The Northern maidan boys found to be the poorest group among the four regions.

4. In the case of agility, the Coastal plain boys were found to be superior at 12, 13, 15 and 16 years. The Malnad region boys were closely followed the path of Coastal plain boys and found superior at the age of 14 years. The Southern maidan boys exhibited mediocre performance in agility, whereas, the Northern maidan boys were found to be the poorest in agility among the four regions.

5. In flexibility, no significant differences were observed among 12 to 16 age group boys belonging to the four different geographical conditions of Karnataka state.

6. In relative VO$_2$ Max., the Coastal region boys exhibited superior status at the age of 12, 13 and 15 years, whereas Malnad region boys exhibited a superior performance at 14 years and found second to Coastal plain in other age groups. The Southern maidan boys exhibited mediocre performance and the Northern maidan boys were found to be the poorest among four regions.

7. In the case absolute VO$_2$ Max., at 12 and 13 years of age, the Southern maidan boys were found to be superior and were followed by Malnad region boys. The Coastal plain boys superseded all other region boys at
14 years and remained as superior group till 16 years of age. The Northern maidan boys were found to be the poorest among four regions.

**Recommendations**

In the light of the findings and the conclusion drawn, the following recommendations are made:

1. The Coastal plain population have shown the best status in physical and physiological capabilities and hence a special care may be offered to them in order to facilitate further development in the status. Accordingly the physical education and sports professionals may design and implement the physical education programmes.

2. The Northern maidan boys have exhibited a very poor status in physical and physiological variables. This alarms the need for reformations in existing programmes of physical education to achieve the effectiveness in promoting the status of physical fitness among the teenagers.

3. Similar type of study may be conducted based on different geographic which may exists in a different states of India.

4. Similar type of study may be conducted on different age groups subjects belonging to various geographical conditions of Karnataka state.

5. The study may be conducted on female subjects of different age groups
belonging to various geographical conditions of Karnataka state.

6. Keeping the natural geographical boundaries of Karnataka state in view the studies may be conducted on the natives of different regions by administering the tests to measure other variables of physical and physiological parameters.

7. The study may be conducted on the subjects who are grouped homogeneously on the basis of socio-economic status belonging to various geographical conditions of Karnataka state.

8. The boys from Coastal plain and Malnad plain showed better performance in speed and explosive power as compared to their counter parts from Southern maidan and Northern maidan. Taking this into account, those sporting events which have speed and explosive power as the vital factors contributing to a higher level of performance like sprints, jumps, throws, etc., may be popularized in these two physiographic regions. While identifying talents for sports events requiring speed and explosive power, boys from these two regions may be preferred.

9. For endurance sports like distance running, cycling, swimming, etc., the Coastal plain boys may be advocated while selecting the talents for such events since their maximum oxygen uptake capacity in terms of relative and absolute values were superior as compared to the boys of the other three regions.