Chapter V

SUMMARY, CONCLUSIONS AND
RECOMMENDATIONS

Summary

The growth refers to the increase caused by the biological process in which the child becomes bigger in size in volume and heavier in weight. Starting its life from almost an invisible dot, the human organs grow to be more than 100 pounds in weight, growth indicates the enlargement of cell, fibers and muscles, elongation of skeleton and increase in general volume of body parts and organic system. Growth is anatomical in nature and to a great extent it is quantitative in the sense that it can be measured. Marked structural changes are noticed as the organism travels further in time. Day after day and year after year as the child looks different in appearance, it concludes that the child is growing. Similarly, the heart also grows bigger, undergoes qualitative transformation when it becomes capable of pumping out more blood and thus withstands the vigorous exercise.

Knowledge of how children grow i.e. the sequential changes and variability in the rate of growth from time to time and from child to child should give every adult, who lives or works with children, a basis of
understanding the individual child. Thus, the teacher can set the stage for the child, fits his activities according to his maturity and ratio of physical growth/development provide him with necessary programme for proper growth.

The purpose of the study was to see the effect of growth on psycho-motor abilities, physiological variables and physical components from sixth to tenth standard school children.

To facilitate this study in total 1500 boys were selected as the subjects, selecting 300 from each standard, from various schools of Gwalior - Radiant Public School, Rishi Ghalav, Kendriya Vidyalaya No.1, Kendriya Vidyalaya No.3. Ebnezer, Airforce Vidya Bharti and R.K.V.M. Their ages varied from 11 to 15 and belonged to VIth, VIIth, VIIIth, IXth and Xth classes respectively.

The psycho-motor variables selected for this study were reaction time, anticipation ability and depth perception. The physiological variables were resting heart rate, vital capacity and breath holding capacity (positive breath holding capacity and negative breath holding capacity). The physical variables were - leg strength, 600 yard run, flexibility - trunk and knee, agility -4x10 meter shuttle run and speed - 50
M. All the tests for the above-mentioned variable were administered in laboratory leaving test for agility, speed and endurance, for which the track and field arena of Lakshmibai National Institute of Physical Education was used.

The criterion measures adopted in this study for reaction time, Anand Electronic reaction time apparatus; for anticipation ability, basin anticipation apparatus; for depth perception, depth perception box; for resting pulse rate, stop watch and individuals radial artery; for vital capacity, wet spirometer; for breath holding capacity, stop watch and a nose clipper; for leg strength, leg dynamometer; for endurance, 600 yard run; for flexibility-trunk (sit and reach box) and knee (goniometer); for agility, 4 x 10 M. shuttle run; for speed, 50 M. Test-retest method was used to establish the reliability.

One-way analysis of variance was employed to see the effect of growth on boys of VIth, VIIth, VIIIth, IXth and Xth for psycho-motor, physiological and physical variable. Further, to compare period mean differences where F-ratio was significant, the post-hoc test (LSD Test) was used. The level of significance was kept at .05 level.
The analysis exhibited that in psycho-motor abilities reaction time and anticipation ability showed significant difference among the classes whereas in case of depth perception significant differences were not there among the classes. The calculated value for reaction time was (F-ratio=185.69); for anticipation ability (F-ratio =42.41), which was greater than tabulated value 3.34 at 0.05 level of significance, while for depth perception the tabulated value was more.

In the physiological variables resting heart rate was significant (F ratio - 4.57), which was more than tabulated value (2.37) at .05 level of confidence, similar was the case with vital capacity (F-ratio 393.50), breath holding capacity - negative (F-ratio 81.743) positive breath holding capacity (F-ratio 816.5).

In the physical variables leaving the trunk flexibility (F ratio .456) all other variables showed significant difference among classes at .05 level of confidence. Leg strength (F-ratio=517.34), 600 yard run(F-ratio=154.50), trunk flexibility (F ratio = .456), knee flexibility (F ratio = 7.760), agility  (F ratio = 10.19) and 50 meter. (F ratio = 268.71).
Conclusions

On the basis of the analysis of data and the limitation of the present study the following conclusion may be drawn.

Psycho-motor Variables

1. Growth had significant effect on reaction time between VIth & VIIth, VIth & VIIIth, VIth & IXth, VIth & Xth, VIIth & IXth, VIIth & Xth, VIIIth & IXth, VIIIth & Xth and IXth & Xth, but no significant effect was there between VIIth & VIIIth.

2. Growth had no significant effect on depth perception of any of the classes from VI to X as F-ratio was not at all significant.

3. Growth had significant effect on anticipation ability between VIth & VIIth, VIth & VIIIth, VIth & IXth, VIth & Xth, VIIth & VIIIth, VIIth & IXth, VIIth & Xth, VIIIth & IXth and VIIIth & Xth but no significant effect was there between IXth and Xth.

Physiological Variables

1. Growth had significant effect on resting heart rate between VIth & VIIth, VIth & VIIIth, VIth & IXth and VIth & Xth but no significant
effect was their between VIth & VIIth, VIth & IXth, VIth & Xth, VIIth & IXth, VIIth & Xth and IXth & Xth.

2. Growth had significant effect on vital capacity between VIth & VIIth, VIth & VIIth, VIth & IXth, VIth & Xth, VIIth & VIIIth, VIIth & IXth, VIIth & Xth, VIIIth & IXth, VIIIth & Xth and IXth & Xth.

3. Breathe Holding Capacity

   1. **Positive breath holding capacity** - Growth had significant effect between VIth & VIIth, VIth & VIIth, VIth & IXth, VIth & Xth, VIIth & VIIth, VIth & IXth, VIth & Xth, VIIth & IXth, VIIth & Xth, VIIIth & IXth, VIIIth & Xth and IXth & Xth.

   2. **Negative breath holding capacity** - Growth had significant effect between VIth & VIIth, VIth & VIIth, VIth & IXth, VIth & Xth, VIIth & IXth, VIIth & Xth, VIIIth & IXth, VIIIth & Xth and IXth & Xth but no significant effect was there between VIIth & VIIIth.

**Physical Variables**

1. Growth had significant effect on leg strength between VIth & VIIth, VIth & VIIIth, VIth & IXth, VIth & Xth, VIIth & VIIIth, VIIth & IXth, VIIth & Xth, VIIIth & IXth, VIIIth & Xth and IXth & Xth.
2. Growth had significant effect on 600 yard run between VIth & VIIth, VIth & VIIIth, VIth & IXth, VIIth & Xth, VIth & VIIth, VIIth & VIIIth, VIIth & IXth, VIIth & Xth and IXth & Xth.

3. Flexibility

**Trunk Flexibility** - Growth had no significant effect between any of the classes.

**Knee Flexibility** - Growth had significant effect between VIth & VIIth, VIth & IXth, VIth & Xth, VIIth & Xth, VIIth & VIIIth & Xth and IXth & Xth but no significant effect was there on VIth & VIIth, VIIth & VIIIth, VIIth & IXth and VIIIth & IXth.

4. Agility - Growth had significant effect between VIth & VIIth, VIth & VIIth, VIth & IXth, VIth & Xth, VIIth & VIIIth, VIIth & IXth and VIIth & Xth but no significant effect between VIIth & IXth, VIIth & Xth and IXth & Xth.

5. Speed - Growth had significant effect between VIth & VIIth, VIth & VIIth, VIth & IXth, VIth & Xth, VIIth & IXth, VIIth & Xth, VIIth & IXth and VIIIth & Xth but no significant effect was there between VIIth & VIIIth and IXth & Xth.
Recommendations

In the light of the conclusions drawn from the study it is recommended that -

1. The games period for school students should be planned in such a manner as a result of which equal attention may be given for the development of physical fitness components, thus making them competent for any activity.

2. A study may be undertaken with girls as subjects of different age groups.

3. A study may be undertaken to compare effect of growth on various variables between girls and boys of same age groups.

4. A similar study may be taken for comparing the students (girls and boys) at college level

5. A similar study may be undertaken to compare boys and girls of school and college level of north and south and east and west.

6. A similar study may be undertaken to compare effect of growth on students of Kendriya Vidyalaya and Navodaya Vidyalaya as one comes up in city while the other in rural areas.