SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary:

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CHAPTER - V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary:

The internal environment of the growing students cannot function properly or harmoniously unless he or she is engaged in vigorous physical activities. But now a day, students have hardly any time to be engaged in such type of programs. In some cases, parents are either indifferent regarding this matter or lacking in knowledge about the factors responsible for growth and development. A large number of children and adolescents are confined to their studies and hardly make any opportunity for movements due to lack of attitude and availability of facilities for sports, games and other physical activities except ‘occasional’ participation in classes of Physical Education.

The too little activity leads to hypokinetic diseases. It is a condition or disease resulting from a sedentary lifestyle or "too little activity of man." Examples include obesity, diabetes (Type II), backache, hyperlipidemia, osteoporosis, hypertension, etc... Etymologically Gk, ‘hypo’ means ‘under’ or ‘less’; ‘kinesis’ means ‘movement’ pertaining to diminished power of movement or motor function, which may or may not be accompanied by a mild form of paralysis.

Regular physical activity can help improve the lives of young people beyond its effects on physical health. Studies have found participation in physical activity increases adolescents’ self-esteem and reduces anxiety and stress.

Participation in physical activity and sports can promote social well-being, as
well as good physical and mental health, among young people. Research has shown that students who participate in interscholastic sports are less likely to be regular and heavy smokers or use drugs, and are more likely to stay in school and have good conduct and high academic achievement.

Exercise can transiently block the expression of statural growth by competitively removing the necessary nutritional support for growth. Statural growth retardation can be corrected by catch-up growth, but stunting may also be permanent (depending on the timing and magnitude of the energy drain). Hypertrophic growth is less dependent on hormonal and nutritional support than statural growth, and exercise provides the necessary mechanical stress for growth and remodelling of the musculoskeletal system. Excessive mechanical strain may suppress hypertrophic growth. The intermittent nature of exercise provides temporal organization that is necessary for the normal operation of cellular growth process.

The significance of physical activity in controlling body weight and maintaining a healthy balance among the tissue components of growing children has been repeatedly demonstrated. Similarly, research has shown the positive effects of vigorous exercise regimens on muscular strength, muscular endurance, and physical working capacity of children. Recent research points to a complex interaction of neural, hormonal, and metabolic factors in response to the stresses imposed by exercise - the effect on tissue and organ growth being a reflection of the nature, duration, and intensity of the exercise regimen as well as the maturational level and exercise tolerance of children. Those certain, as yet undefined, levels of physical activity are essential to the normal growth and health of children would seem to be self-evident.

The thyroid gland controls how quickly the body uses energy, makes proteins,
and controls how sensitive the body is to other hormones. It participates in these processes by producing thyroid hormones, the principal ones being triiodothyronine (T₃) and thyroxine (T₄) which can sometimes be referred to as tetraiodothyronine (T₄). These hormones regulate the rate of metabolism and affect the growth and rate of function of many other systems in the body.

In the course of growing up, a child learns not only about people and objectives in the world around him, but also about himself. The self-awareness is a growth process which begins in childhood and develops through his interaction with other members of the society and his total environment. It changes as he compares himself with his peers in competition, it changes as he develops confidence and courage and it changes according to his success and failure. Success enhances a child’s self-concept and he is, therefore, likely to seek areas where this can be found, and to avoid areas where failure is likely. There is general acceptance that children and adults with poor self-concept are more anxious and tense and less well-adjusted as compared to those having good self-concept.

In our country, we need prudential approaches with the application of scientific knowledge and wisdom. Unless the whole affair is envisaged with a scientific view, the craze for a remedial positive effect which encompasses the gamut of growth and development cannot be materialized. Considering the present scenario due to physical inactivity vigorous physical activity in modern life is essential.

Here is an attempt to know the degree of intensity, volume and frequency that can change some anthropometric, physiological, and bio-chemical variables. I am also interested to know how physical programs can contribute to the self-concepts of the participants. The present thesis is the fruit of that thinking and imagination.
The related researches have been reviewed from the available recourses and incorporated in the chapter – II.

The principal parameters were comprised of:

1. **Anthropometric**
   - Body Mass, Stature;
   - Body Mass Index (BMI), Pryor’s Width Length Index (PWLI),
   - Relative Arm Index (RAI), Crural Index (CI).

2. **Physiological**
   - Resting Heart Rate (RHR), Exercise Heart Rate (HRmax), PEI,
   - Predicted VO$_{2max}$

3. **Biochemical**
   - T$_3$, T$_4$, and TSH

4. **Psychological**
   - Self – Concept

After selection of subjects (AP and OP), the initial data on the relevant variables on four different parameters, were collected by the researcher himself at all points along with the assistance of some qualified professional in the relevant field. The data on hormonal estimation were collected from the blood samples of the subjects which were also operated by qualified technicians on every event. The bio – assay was done by the renowned sSERUM ANALYSIS CENTRE, KOLKATA, through CHEMILUMINESCENCE ASSAY (CLIA). All tests were conducted by the same group of professional assistance for consecutive three days according to feasibility.

The AP group had undergone a well – organized micro – cycle for the athletes whereas the OP group used to take part in any physical activity, sports and games without any regular frequency. The subjects were selected according to random choice. The treatment was executed by the concerned qualified coach on the selected sample (AP) for one year comprising double periodization. The data were collected at an interval of three months following a longitudinal mode in five successive phases for analysis of findings.
Since the OP group did not undergo any organized training programme and at the same time they had been participating in different types of physical activity at oad intervals, they were not the regular participants. They used to take part in various activities with a frequency of two or three days per week. The details of the methodology adopted in this study have been described in chapter III.

Analysis was conducted using statistical package SPSS 20.0 for social science. Means, standard deviations, ANOVA with LSD post hoc test were calculated and for the significant variables were done. The level of significance was set for this study at 0.05 level. The results were analyzed and discussed in length in the chapter – IV.

5.2 Conclusions:

Based on the results of the present study and with the limitations mentioned earlier, the following conclusions may be drawn:

1. Effect of exercise on metabolic and endocrine functions due to active participation in sport reduces BMI.
2. Regular exercise helps secretion of thyroid hormones (T₃, T₄ and TSH) at its normal clinical range to gradually gain better in vertical growth than the growth in width (PWLI).
3. Active participation in sport works as positive catalyst to increase relative arm index (RAI).
4. Long term systematic active participation in sport helps to enhance crural index (CI).
5. Influence of active participation in sport results in resting bradicardia of young male athletes than that of occasional participants.
6. Regular participation in exercise reduces HR_max and the occasional participants are devoid of such benefit.
7. Regular active participation in sport reduces the level of T₃ which enhances maximum aerobic power (VO₂max) in the OP group.
8. Sport participation improves physical efficiency index (PEI) consistently as compared to occasional participants.
9. A chronic exercise of long term training has induced significant linear reduction in T₃ concentration of young males.
10. Participation in intensive sport activities for a long time helps to augment the level of T₄.
11. TSH continues to increase as a result of long term intensive training.
12. Participation in games and sports actively improves total behavioural pattern (SC I) of the young males.
13. Active sport participation improves level of intellectual and social status (SC II) better than occasional sport participants.
14. Appearance and Attributes (SC III) of the active sport participants is higher than that of the OP group.
15. Hard practice and participation in sports competition helps the AP group to reduce their level of anxiety (SC IV).
16. Sport participation enhances popularity (SC VI) among young AP group.
17. Active sport participation is very much needed to keep AP group for Happiness and Satisfaction (SC VI).
18. Active sport participation develops self – concept better than occasional sport participation.
5.3 Recommendations:

1. Similar study may be done on young females.

2. A further study may be done with a large number of subjects.

3. Similar study may also be done on the equated subjects.

4. Similar study may be done on with special reference to nutritional management.

5. A further study may also be done on growth hormone.