5.1 SUMMARY

Boxing is anaerobic in nature. Anaerobic means to conduct an activity without oxygen. Anaerobic trainings, like boxing, stress the muscles at a high intensity for short periods of time. A perfect example is a fast combination that a fighter throws in a ring. The aerobic portion of the match takes place when the boxer circles the ring perhaps catching a quick breath. Aerobic training is defined as low intensity activities performed for extended periods of time.

It is quite clear that a long slow distance (LSD) running is not a sport specific form of conditioning for boxing. A fighter must pattern his training after the physical demands of the sport. Boxers are mainly involved in aerobic and anaerobic trainings to improve their physical fitness levels and to improve their boxing performances. There was dearth of studies in measuring the effect of aerobic and anaerobic trainings on selected physical, physiological and performance variables on boxers. Hence, the investigator felt the need for undertaking a study on isolated and combined effects of aerobic and anaerobic trainings on selected physical, physiological and performance variables of college men boxers.

The purpose of this study was to find out the isolated and combined effects of anaerobic and aerobic training on selected physical, physiological, and performance variables of college men boxers. To achieve the purpose of the study, eighty men boxers were selected from Tamil Nadu colleges, who had participated in the inter-
collegiate level tournaments. They were selected at random as subjects. All the subjects were residents of Tamil Nadu state and they had a similar academic work and regular activities in accordance with the requirements of their college curriculum.

The selected subjects were of age group ranging from 18 to 25 years. The subjects were randomly divided into four groups and each group consisted of twenty subjects. Group one acted as experimental group-I and group-two acted as experimental group-II and group-three acted as experimental group III and group four acted as control group. Group one underwent isolated aerobic trainings, group two isolated anaerobic trainings, group three combination of aerobic and anaerobic trainings and group four was not given any special treatment. The experimental period was for 12 weeks.

The investigator reviewed the available scientific literature pertaining to the study from books, journals/periodicals/magazines and research papers. Taking into consideration the feasibility, the physical fitness variables selected were speed, agility, muscular strength and arm explosive power. The physiological variables selected were resting heart rate, breath holding time, vital capacity and cardiovascular endurance. The performance variables selected were boxing punches, defensive skills and overall boxing ability.

Pre test-post test-random group-research design was followed in this study; the selected subjects were divided into four groups, and obtained pre test scores on selected physical, physiological and performance variables. After determining the pre test scores on the subjects, the subjects were subjected to experimental treatment of isolated and combined treatments of anaerobic and aerobic trainings for experimental groups I,
II and III respectively and the control group was not exposed to any treatment. The difference between the obtained pre test and post test scores were the effect of isolated and combined anaerobic and aerobic training. To test the statistical significance of the treatments, the obtained data were subjected to statistical treatment using Analysis of Covariance (ANCOVA).

The subjects were compared on the effect of isolated and combined effect of anaerobic and aerobic training on selected physical, physiological and performance. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the groups on selected criterion variables. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as appropriate.

The results obtained proved that there was significant improvement in selected physical, physiological and performance in boxing on college level boxers due to isolated and combined effect of anaerobic and aerobic training.

5.2 CONCLUSIONS

Within the limitations and delimitations of this study, the following conclusions were drawn:

1. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve speed of the college boxers. And anaerobic and combined groups are significantly better than aerobic training.

2. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve agility of the college boxers. And anaerobic and combined group are significantly better than aerobic training.
3. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve arm explosive power of the college boxers. And anaerobic and combined groups are significantly better than aerobic training.

4. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve agility of the college boxers. And anaerobic and combined group are significantly better than aerobic training.

5. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve muscular strength of the college boxers. And there are no significant differences among treatment groups.

6. It is concluded that combined effect of aerobic and anaerobic training significantly improve resting pulse rate of the college boxers. And there are no significant differences among treatment groups.

7. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve breath holding time of the college boxers. And there are significant differences between combined group and aerobic groups.

8. It is concluded that anaerobic training significantly improve vital capacity of the college boxers. And there are no significant differences among treatment groups.

9. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve cardiovascular endurance of the college boxers. And there are significant differences among combined group and anaerobic groups.
10. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve punching performance of the college boxers. And there are significant differences among treatment groups.

11. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve defense performance of the college boxers. And there are significant differences among treatment groups.

12. It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve overall boxing performance of the college boxers. And there are significant differences among treatment groups. A successful training program is designed to meet the individual needs of an athlete. However by combining aerobic and anaerobic workouts into one training plan, boxers can improve endurance, stamina, strength and power. (www.live strong.com 30.05.11)

5.3 RECOMMENDATIONS

The findings of this study have proved that there is significant improvement due to isolated and combined effects of aerobic and anaerobic training on selected physical, physiological and performance variables of college boxers. Hence, it is recommended to include combined aerobic and anaerobic training in the training schedule of the college boxers to improve their performance level in boxing. If this combined training is executed well, we can see significant difference in players who have undergone other training programmes, especially boxers. Boxers who have undergone this training will show consistent high level performance in raising the standard of boxing.
Since the findings of this study have proved that combined aerobic and anaerobic trainings are helpful in improving physical, physiological and performance variables, the educational administrators and sports scientists may include suitable programs in school or college and sports curriculum so that students gain a holistic improvement.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

During the course of this research, the investigator had an opportunity to learn a lot and felt that he could put forward some suggestions for further research so that aspiring researchers would dive deeper in the bottomless ocean of knowledge and search for newer pearls, for the benefit of humanity.

Here are some suggestions:

1. A research may be undertaken to find out the effects of isolated and combined aerobicics and anaerobic training on variables which have not been covered by this research.

2. A research to find out the effects of circuit training and progressive intensity of anaerobic on physical, physiological and performance variables may be undertaken.

3. This research was conducted among college level boxers. A similar study may be conducted selecting/choosing school and state level boxers.

4. A similar research may be conducted for comparing the physical, physiological and performance of boxers at different levels.