

## CHAPTER V

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# **SUMMARY CONCLUSIONS AND RECOMMENDATIONS**

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### SUMMARY, CONCLUSIONS AND RECOMMENDATION

#### 5.1 SUMMARY

Physical training is aimed at better performance by toning up specific motor fitness and physiological conditions. Detraining is defined as the partial or complete loss of training-induced adaptations in response to cessation of training or a substantial decrease in training load. Retraining is recovery of condition after a period of inactivity. Changes to the heart from detraining are rapid and dramatic, changes took months and even years to develop, are undone in just days. The frequent appearance in the literature of the terms perceptual motor and sensory motor is indicative of the fact that the interactions of input to output are being scrutinized more and more by contemporary scholars. The studies in which the perceptual abilities of motor activities have been explored in motor skills, including their health related physical fitness, while other information emanating from these investigations contribute to more basic understanding of how humans perceive, move and develop. Aerobic training is aimed at better performance by toning up specific health related physical fitness and physiological conditions. Detraining is defined as the partial or complete loss of training-induced adaptations in response to cessation of training or a substantial decrease in training load. Retraining is recovery of condition after a period of inactivity. Changes to the heart from detraining are rapid and

dramatic, changes took months and even years to develop, are undone in just days. Ross A, and Leveritt M. (2001) reported that the adaptations of muscle to aerobic training can be separated into metabolic and morphological changes. Metabolic adaptation to sprint training showing signs of adaptation to training and some evidence of a return to baseline levels with detraining. However return to pre-training levels after somewhere between 7 weeks and 6 months of detraining has been proved. Morphological adaptations to aerobic training show that these variables have profound effects on the metabolic, structural and performance adaptations and these changes take a considerable period of time to return to baseline after a period of detraining. Thus, the adaptations that involve remodeling of the muscle (e.g., enhanced mitochondrial content and increased capillarity) are influenced by the duration and intensity of daily exercise require an extended training period to achieve a steady-state adaptation, and are lost with inactivity. (Ronald L. Terjung, 1995).

The purpose of the study was to find out the effects of aerobic training, detraining and retraining on selected health related physical fitness components among University male students. To achieve the purpose of this study, forty University men students were selected as subject from different colleges in West Bengal University. The selected subjects' age group was ranging from nineteen to twenty four years. The health related physical fitness components selected motor ability components selected for the study were, flexibility, muscular strength, muscular endurance, cardiorespiratory endurance and body

composition were recorded prior to the experimental period which was considered as initial scores of the subjects. The selected aerobic training was administered to the university men in a circuit manner under different stations for 8 weeks and measured of their health related physical fitness variables which formed the training effects. Measurements were collected on selected variables after 2 weeks on completion of training, which was considered as the short term detraining effect. Measurements were collected on selected variables after 4 weeks after completion of training, which was considered as long term detraining effect. After the completion of detraining phase, the subjects were again retrained following the selected aerobic training. After the completion of two weeks retraining, measurements taken on selected variables, which were considered as short term retraining. On completion of four weeks of retraining measures were taken on selected variables which were considered as long term retraining. The differences among means of initial, final, short term detraining, long term detraining, short term retraining and long term retraining were subjected to statistical treatment using repeated analysis of variance (Repeated ANOVA).

The results of the study revealed that health related physical fitness components, such as, muscular strength, muscular endurance, flexibility, cardiovascular endurance were significantly influenced by aerobic training, detraining and retraining among university men students. However, there were no significant changes due to aerobic training, detraining and retraining on body

composition, as determined through percent body fat among university men students.

## 5.1 CONCLUSIONS

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

1. It was concluded that there was significant improvement on health related physical fitness, muscular strength comparing with initial score with after training score and after long term retraining among University men students.
2. It was concluded that there was significant reduction in muscular strength due to short term and long term detraining comparing to after training scores.
3. It was concluded that there was improvement on muscular strength due to short and long term retraining comparing to after training scores, however these improvements were not significant among university men students.
4. It was concluded that there was significant improvement on muscular strength from short term detraining scores to long term retraining scores.

5. It was concluded that the comparisons proved that there was significant improvement in muscular strength among university male students from long term detraining scores to short term retraining scores and to long term retraining scores.
6. It was concluded that health related physical fitness component, muscular endurance was significantly improved due to aerobic training, detraining and retraining phases compared to initial scores among university male students.
7. It was concluded that though there was gradual decrease in muscular strength due to short term and long term detraining, gradual increase due to short term and long term retraining, these differences were not significant
8. It was concluded that as for, health related physical fitness component, flexibility, comparing to Initial Score the after training scores, short term retraining and long term retraining scores were significantly improved flexibility of the subjects. The short term and long term detraining phases though improved flexibility compared to initial scores these improvements were not significant
9. It was concluded that compared to post test scores of the subjects with short term detraining, long term detraining, and long term retraining

there was decrease and increase in flexibility, however, these differences were not significant.

10. It was concluded that the short term retraining scores were significantly better than after training scores of health related physical fitness component, flexibility among university men students. .
11. It was concluded that the short term retraining scores were also significantly greater than short term detraining scores of flexibility.
12. It was concluded that the long term detraining scores were improved significantly by short term retraining, however there was no significant improvement due to long term retraining on flexibility among University men students.
13. It was concluded that aerobic training and retraining significantly improved health related physical fitness variable, cardiovascular endurance of the university men students.
14. It was concluded that the short term detraining scores were significantly better than the initial scores of cardiovascular endurance of the subjects.
15. It was concluded that there was no significant improvement on long term detraining to short term retraining scores and to initial scores of the subjects.

16. It was concluded that comparing to post test scores on cardiovascular endurance long term detraining proved to be significantly reduced and there were small decrease and increase due to short term detraining, short term retraining and long term retraining, these differences were not significant.
17. It was concluded that comparing the short term detraining scores with long term retraining scores of cardiovascular endurance; it was proved significant reduction and significant improvement.
18. It was concluded that while the short term retraining failed to significantly improve the cardiovascular endurance comparing to long term detraining scores, it was found that long term retraining significantly gained over long term detraining.
19. It was concluded that the cardiovascular endurance of the university male students significantly improved due to long term retraining than short term retraining.
20. It was proved that health related physical fitness component Body Composition, failed to alter percent body fat due to the aerobic training (8 weeks), short term detraining (2 weeks), long term detraining (2 weeks), short term retraining (2 weeks) and long term retraining (2 weeks) among university men students.



## 5.2 RECOMMENDATIONS

The findings of this study proved that University men students' health related physical fitness variables, muscular strength, muscular endurance, flexibility, and cardiovascular endurance could be significantly altered by aerobic training, detraining and retraining. In the light of the above findings, the following recommendations are made.

1. Efforts may be taken by coaches, sports scientists and educational authorities to include protocol of the suggested aerobic training for sedentary students to improve their health related physical fitness levels.
2. In the light of the findings of the study, adequate short term detraining may prove to students for better improvement in selected variables, hence, suitable intervals for training and retraining may be included for the students.
3. In the light of the findings of the study, need of performing a minimal maintenance programme to avoid excessive declines in health related physical fitness variables in cases where a prolonged break from training is required.
4. Efforts may be taken to provide long term detraining at times of indispensable circumstances, as long term detraining significantly

lowers the selected health related physical fitness variables of the subjects.

5. In the light of the findings of this study, efforts may be taken to improve through short term detraining and short term retraining on selected variables.
6. In the light of the findings of this study a longer training programme at higher work intensity is needed to evoke significant changes in selected health related physical fitness components, including body composition of the subjects.
7. Advantages of detraining and retraining may be popularized among University men for their all round development of health related physical fitness levels.

#### **5.4 SUGGESTIONS FOR FURTHER RESEARCH**

1. The effect of training, detraining and retraining on selected variables, not covered by this research may be undertaken.
2. A similar study may be conducted among University sportsmen to find out the effect of training, detraining and retraining on health related physical fitness components.

3. Since this study covered the university men only, a similar research may be undertaken among university women to find out the effect of training, detraining and retraining.
4. Research may be undertaken to find out the relationship between the different phases of training, detraining and retraining on selected variables.
5. Similar researches may be undertaken to find out the influence of training, detraining and retraining protocols on school level students.
6. Comparisons may be made to find out the effects of different training protocols such as, isometric training, and isotonic training with aerobic training on selected physical, physiological and performance variables of the students.
7. Comparisons may be made to find out the effects of varied intensities of suggested aerobic training on selected physical, physiological and performance variables of the students.