Chapter V

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1: SUMMARY

Sports training are a process of athletic improvement, which is conducted on the basis of scientific principles through which systematic development of mental and physical efficiency, capacity and motivation enables athletes to produce outstanding and record breaking athletic performance. Different activities make different demands upon the organism with respect to the circulatory, respiratory metabolic and neurologic processes which are specific to the activity. Swiss balls are one of today's top fitness tools. Using a Swiss ball will improve the strength of the abs and the lower back. Since the Swiss ball is unstable we have to constantly adjust our balance, which in turn will improve our balance, proprioception and flexibility. As an extra challenge we can use the exercise ball as a bench using free-weights to target those hard to reach stabilizer muscles. Flexibility training, or stretching, is used in varying forms by practically every coach, athlete and physiotherapist on a regular basis. That is to say, a form of stretching is likely to take place at some point in every training or therapy session. In terms of its scientific basis, flexibility training is probably the least understood of the fitness components.

In this study the effect of isolated and combined swiss ball and flexibility training on selected physical fitness, biochemical and skill performance variables among school volleyball players were investigated. To achieve this purpose, forty male volleyball players studying various schools in Vellore District of Tamil Nadu, India, during the academic year 2012-2013 were randomly selected as subjects and their age ranged from 16 to 18 years. The selected subjects were divided into four groups of ten subjects each. Group-I underwent Swiss ball training, group-II underwent flexibility training, group-III underwent combined Swiss ball and flexibility training, and group-IV acted as control that did not undergo any special training programme. All the subjects of the four groups were tested on selected dependent variable namely speed, muscular strength, flexibility, explosive power, triglycerides, HDL-cholesterol, LDL-cholesterol, hemoglobin, under arm pass, over hand pass and serving ability at before the commencement of training programme (pre-test) and after the respective training programme for a period of twelve weeks (post-test).

The experimental design used in this study was random group design involving 40 subjects, who were divided at random in to four group of ten each. All the four group subjects were selected from the same population. No effort was made to equate the groups prior to the commencement of the experimental treatment. The pre test means of the selected dependent variable was used as a covariate. The data collected from the four groups prior to and post

experimentation on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since four groups were involved, whenever the obtained 'F' ratio value was found to be significant for adjusted post test means, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases the level of confidence was fixed at 0.05 for significance which was considered as appropriate.

In this study, if the obtained F ratio value were greater than the table value, the null hypotheses were rejected to the effect that there existed significant difference among the means of the groups compared and if the obtained values were lesser than the required values at 0.05 level, then the null hypotheses were accepted to the effect that there existed no significant differences among the means of the groups under study.

5.2: CONCLUSIONS

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

5.2.1: Physical Fitness Components

Due to the effect of Swiss ball training, flexibility training, and combined training the speed and muscular strength of the volleyball players was significantly improved however, combined Swiss ball and flexibility training was significantly

better than isolated Swiss ball training and flexibility training in improving speed and muscular strength. On the other hand no significant differences were found between isolated Swiss ball and flexibility training in improving speed and muscular strength

In improving flexibility of the volleyball player's significant differences were found among experimental groups however flexibility training was significantly better than combined training and Swiss ball training.

The explosive power of the volleyball player's was significantly improved as a result of isolated and combined Swiss ball and flexibility training. Significant differences were found between swissball and flexibility training groups, swissball and combined training groups however, no significant differences were found between flexibility and combined training groups in improving explosive power.

5.2.2: Biochemical Parameters

As for as biochemical variables are concerned the triglycerides, high density lipoprotein cholesterol, low density lipoprotein cholesterol and hemoglobin level of the volleyball players were significantly changed due to the effect of isolated and combined Swiss ball and flexibility training, however, no significant differences were found between the experimental groups in altering the selected biochemical parameters.

5.2.3: Skill Performance Variables

Due to the impact of twelve weeks of isolated and combined Swiss ball and flexibility training the over hand pass, under arm pass and serving ability of the volleyball players was significantly improved, however, combined Swiss ball and flexibility training was significantly better than isolated Swiss ball training and flexibility training in improving the selected volleyball skill performances.

5.3: RECOMMENDATIONS

In the light of the above findings, the following recommendations are made.

1. Efforts may be undertaken to include swiss ball and flexibility training in the physical education curriculum of the school, as it improves physical fitness, biochemical and skill performance variables.
2. Efforts may be taken by coaches, sports scientists and educational authorities to include the suggested exercise protocols in the training schedules of athletes of all games and sports.
3. Advantages of swiss ball and flexibility training may be popularized among school volleyball players for their all round development of physical fitness, biochemical and volleyball skill performance variables.
4. Furthermore, swiss ball core strength training, performed in conjunction with flexibility training, are recommended to improve proprioceptive and reactive capabilities.

5. Studies examining bilateral asymmetries (or symmetry) related to successful performance may provide the coach, strength and conditioning specialist, and athlete with the knowledge that will help the athlete excel in his or her sport.
6. Further study might involve larger sample sizes, comparison with an appropriate treatment group, and assessment of physiological benefits.
7. This study examined several characteristics (physical, biochemical and skill performance) of volleyball players. Future studies examining these characteristics bilaterally in athletes of different sports, different playing positions, and different levels may provide coaches with a more accurate findings during a bilateral comparison.
8. This study highlights the need for further investigation into the contribution of combined swiss ball and flexibility training to volleyball game performance and the need for a better understanding of how interventions involving simultaneous strength and flexibility could provide health benefits.
9. Research exposing these mechanisms may give insight for future research in this area**.**