

## **Chapter – V**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 SUMMARY**

Training is the main component and the basic form of preparing the athlete for higher level of performance. It is systematically planned preparation with the help of the exercise, which realized the main factors of influencing athlete's progress. The content of training includes all the basic type of preparation of the sportsman, physical, technical, and psychological. Through systematic training the athlete fitness level and his acquisition of vital knowledge and skill are improved.

Sports training aims to prepare a sportsman for better performance through physical exercise. It is based on the scientific principles of aiming at education and performance enhancement. The improvement of physical fitness includes improvement of general health and organic functions as well as increasing the strength and stability of the muscle-skeletal system. Development of motor skill is also the objective of sports training. Sports activities consist of motor movement and action and their success depends largely on how correctly they are performed. Techniques of training and improvement of tactical efficiency play a vital role in the training process.

Motor fitness is one of the most important factors that determine the performance level of an individual. Sports performance depends largely on motor factors such as strength, speed, power, endurance, flexibility and

various abilities requiring co-ordination. Sports activity is a physical activity which is not possible without these motor abilities. Fitness factors are most important for predicting athletic performance. Natural ability is the promise of potential but fundamentals are the foundation of excellence.

Plyometrics refers to bodily movement that involves an eccentric (lengthening) muscle contraction immediately and rapidly followed by a concentric (shortening) contraction. This is often referred to as the stretch-shortening cycle. The phase between these two contractions is referred to as the amortization phase. Energy stored during the eccentric phase is partially recovered during the concentric phase. In order to best use this stored energy the eccentric phase must be rapidly followed by the concentric.

Anaerobic means 'without oxygen'. During anaerobic work, involving maximum effort, the body is working so hard that the demands for oxygen and fuel exceed the rate of supply and the muscles have to rely on the stored reserves of fuel. In this case waste products accumulate, the chief one being lactic acid. The muscles, being starved of oxygen, take the body into a state known as oxygen debt. The body's stored fuel soon runs out and activity ceases with pain.

Volleyball is a dynamic and fast-paced game. The purpose of strength training for volleyball players is not to build big muscles, but to develop the physical attributes necessary to improve a player's performance. So, strength training is very important to volleyball players and it should not be developed

independently of other abilities such as agility, quickness and endurance. When watching a great volleyball player, the one word that comes to the mind is "quick". Everything the player does is short and quick. There are no long drawn out motions like sprinting in other sports. There is simply a succession of explosive bursts that keeps the ball in play and controls the flow of the game. The quickness that must be focused on, when training a volleyball player is not only quickness from side to side and front to back, but also quickness from up to down. Unique from other sports, volleyball players must be able to quickly change direction from the upward motion of a vertical jump to the downward motion of a point-saving dig or vice versa. One of the most crucial phases of volleyball is how players perform at the net. To be successful, teams must be able to control play at the net both offensively and defensively. Since this is the case, two of the most valued traits in a volleyball player are height and jumping ability. Both of these traits allow players to greatly influence the game because they can more easily go where the ball is inevitably going up, Since there is no way to train height (yet), the focus of training falls squarely on jumping ability. Developing an athlete's jumping skills allows them to elevate quicker and higher in order to take better shots by themselves and to block more of their opponent's shots. Since the same skills that send an athlete up also create quick first steps improving jumping skills will also positively influence other areas of a volleyball player's performance.

In this context the researcher made an attempt to identify the high intensity plyometric training, anaerobic training and cross training modalities

for improving motor fitness, physiological and skill variables of volleyball players.

To achieve the purpose of the study, one hundred (N=100) men volleyball players who have participated in state and inter-collegiate volleyball tournament during the year 2012-2013 were selected as subjects. Their age ranged between 19 to 23 years. The age, height and weight of the subjects were ranged from 19 to 23 years, 156 to 167 cms and 50 to 59 kg respectively, and the means were 19.5 years, 158 centimeters and 50 kilograms respectively. The subjects were divided at random into four groups of twenty five each (n=25). The experimental group-I underwent high intensity plyometric training, experimental group-II underwent anaerobic training, experimental group-III underwent cross training and the group IV acted as control. Among the motor fitness, physiological and volleyball skills factors, agility, speed, explosive power, flexibility, co-ordination, resting pulse rate, respiratory rate,  $VO_{2max}$ , breath holding time, anaerobic power, set, attack, block, pass and serve were selected as dependent variables. All the experimental groups were tested on selected dependent variables prior to and immediately after the training periods. The collected data's were analysed by using 't' test and analysis of covariance (ANCOVA) to determine the differences, Whenever 'F'-ratio for adjusted post-test mean was found to be significant, the Scheffe's test was applied as post-hoc test to determine the paired mean differences. The level of significance was fixed at 0.05 level of confidence for all the cases.

## 5.2 CONCLUSIONS

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

1. High intensity plyometric training, anaerobic training and cross training programs significantly improved the selected motor fitness variables such as agility, speed, explosive power, flexibility and co-ordination of the volleyball players.
2. High intensity plyometric training, anaerobic training and cross training programs significantly improved the selected physiological variables such as resting pulse rate, respiratory rate, VO<sub>2</sub>max, breath holding time and anaerobic power of the volleyball players.
3. High intensity plyometric training, anaerobic training and cross training programs significantly improved the selected volleyball skill variables such as set, attack, block, pass and serve of the volleyball players.
4. Cross training group was found better than high intensity plyometric training group and anaerobic training group in improving motor fitness, physiological and skill variables such as agility, speed, explosive power, flexibility, co-ordination, resting pulse rate, respiratory rate, VO<sub>2</sub>max, breath holding time, anaerobic power, set, attack, block, pass and serve of the volleyball players.
5. There was no significant improvement observed on control groups.

### **5.3 RECOMMENDATIONS**

1. This research proved that cross training improved motor fitness, physiological and skill variables of the volleyball players. Hence, it was recommended to include suitable cross training schedule of the volleyball players to improve their performance level in volleyball.
2. Since the findings of this study proved that cross training is helpful in improving improved motor fitness, physiological and skill variables of the volleyball players, the educational administrators and sports scientists may include suitable cross training in the college level physical education and sports curriculum so that the students gain all round improvement.
3. Awareness on the benefits of cross training may be spread among college/university level players on the importance of improving specific motor fitness, physiological and skill variables in sports and for the benefit of all round fitness.
4. The findings of the study would help in formulating and altering changes in the volleyball training manuals of male players.
5. The out put of the findings would be a significant contribution to the filed of physical education and sports in bringing out new innovations in training methods.

6. The significance of this study would pay a way to new branches of Research in the field of volleyball coaching and training.
7. The results arrived out this study would amplify the new areas to be integrated with the traditional volleyball training manual.

### **SUGGESTIONS FOR FURTHER RESEARCH**

During the course of this research, the investigator come across number of ideas and suggestions for further research, which were not in the ambit of the present research. Some of the most important suggestions presented below for future researchers.

1. A research to find out the effect of high intensity plyometric training, anaerobic training and cross training on selected motor fitness, physiological and skill variables of volleyball players, which are not covered by this research, may be undertaken.
2. This research was conducted among at college/University level volleyball men players, a similar study may be conducted among girls volleyball players.
3. A research to find out the effect of high intensity plyometric training, anaerobic training and cross training may be conducted among sportsmen of other games.
4. A similar research may be conducted among higher secondary school level volleyball players.