

## CHAPTER V

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 SUMMARY

The strength requirements of each sport must be assessed in order to develop an appropriate, specific program. In general, sports requiring muscular endurance employ strength-training schedules involving a great number of repetitions, while those requiring strength use fewer repetitions. Therefore, serious athletes need to work under the direction of strength-training coaches who have the knowledge and experience to create the kinds of programs appropriate to any given sport. Resistance Training involves the application of elastic or hydraulic resistance to muscle contraction rather than gravity. Weight training provides the majority of the resistance at the beginning, initiation joint angle of the movement, when the muscle must overcome the inertia of the weight's mass.

The plyometric training is to produce greater power by training the muscles to contract more quickly and forcefully from an actively pre-stretched position. The effectiveness of the exercise relies upon the conditioning of the myotatic, or stretch-reflex, mechanism and the natural elastic properties of the muscle. A concentric contraction is much stronger when it is preceded by an eccentric contraction. In an eccentric contraction, the muscle reacts very powerfully against the rapid stretching. This reaction is the stretch-reflex. A fundamental principle of plyometric training is that the muscle needs to be pre-stretched quickly. The rate of stretch of the muscle is much more important than the degree of stretch.

Through systematic training endurance, strength, flexibility, agility and other motor fitness abilities of college player improves. There are several studies that proved that different training methods improve selected physical and physiological variables. And there are several studies that proved that plyometric training improves selected physical and physiological variables. However there are lack of researches that aims at finding out the effect of plyometric training, resistance training and combined training on selected biochemical variables and motor fitness components of college women. Hence the investigator was interested to find out the effect of plyometric, resistance and combined training on selected biochemical variables and motor fitness components of college women.

The purpose of the study was to find out effect of plyometric training, resistance training and combined training on selected biochemical variables namely, hemoglobin (Hb), high density lipoprotein (HDL), low density lipoprotein (LDL), very low density lipoprotein (VLDL), triglycerides (TG), and total cholesterol (TC), and motor fitness components namely, speed, agility, balance, and muscular power among college women. To achieve the purpose of the study, 80 college women who represented their college in any of the following games namely, volleyball, basketball, football and handball were selected at random. The subjects were selected from various arts and science colleges in Bangalore, India. The age of the subjects ranged between 18 and 25 years. The selected subjects were fit to undergo the experimental training and gave their written consent to participate in the study. The research design of the study was random group design. 80 college women who represented their college in any of the following games namely, volleyball, basketball, football and handball were selected at random. The selected subjects were randomly divided into four groups and assigned into plyometric training group (Group-I), resistance training group (Group-II), combined training group (Group-III) and

control group (Group IV). Each group consisted of 20 subjects. The training period was 12 weeks and three sessions a week on alternative days. The pre and post test were conducted on all the four groups on the selected criterion variable

### **5.1.1 LEVEL OF SIGNIFICANCE**

The subjects were compared on selected criterion variables among different groups. The data on selected criterion variables hemoglobin (Hb), high density lipoprotein (HDL), low density lipoprotein (LDL), very low density lipoprotein (VLDL), triglycerides (TG), and total cholesterol (TC), and motor fitness components namely, speed, agility, balance, and muscular power were collected.. The ANCOVA was used to find out the significant difference if any, between the groups on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as appropriate.

The results proved that plyometric training, resistance training and combined training significantly altered biochemical variables, hemoglobin (Hb), high density lipoprotein (HDL), low density lipoprotein (LDL), very low density lipoprotein (VLDL), triglycerides (TG), and total cholesterol (TC), and motor fitness components namely, speed, agility, balance, and muscular power. The results further proved that combined training was significantly better than plyometric and resistance training on blood cholesterol, agility, balance and muscular power among college women.

## **5.2 CONCLUSIONS**

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

1. It was concluded that plyometric training, and combined training significantly altered biochemical variable such as, hemoglobin among college women. Comparing between treatment groups, it was found that there was no significant differences on hemoglobin.
2. It was concluded that plyometric training, resistance training and combined training significantly altered biochemical variable such as, high density lipoprotein (HDL) among college women. Comparing among treatment groups, it was found that there was no significant differences on HDL among college women.
3. It was concluded that plyometric training, resistance training and combined training significantly altered biochemical variable such as, low density lipoprotein (LDL) among college women. Comparing among treatment groups, it was found that there was no significant differences on LDL among college women.
4. It was concluded that plyometric training, and combined training significantly altered biochemical variable such as, very low density lipoprotein (VLDL) among college women. Comparing among treatment groups, it was found that there combined training was significantly better than resistance training VLDL among college women.
5. It was concluded that combined training significantly altered biochemical variable such as, triglycerides among college women. Comparing among treatment groups, it was found that there was no significant differences on triglycerides among college women.
6. It was concluded that plyometric training, resistance training and combined training significantly altered biochemical variable such as, total cholesterol among college women. Comparing among treatment groups, it was found that combined training group

was significantly better than plyometric training on total cholesterol among college women.

7. It was concluded that plyometric training, resistance training and combined training significantly improved motor fitness variable such as, speed among college women. Comparing among treatment groups, it was found that there was no significant differences on speed among college women.
8. It was concluded that plyometric training, resistance training and combined training significantly improved motor fitness variable such as, agility among college women. Comparing among treatment groups, it was found that the combined training group was significantly better than resistance training group on agility among college women.
9. It was concluded that plyometric training, resistance training and combined training significantly improved motor fitness variable such as, muscular power among college women. Comparing among treatment groups, it was found that the combined training group and plyometric groups were significantly better than resistance training group on muscular power among college women.
10. It was concluded that plyometric training, resistance training and combined training significantly improved motor fitness variable such as, balance among college women. Comparing among treatment groups, it was found that the combined training group and plyometric groups were significantly better than resistance training group on balance among college women.

### **5.3 RECOMMENDATIONS**

The findings of this study proved that college women biochemical variables, hemoglobin, HDL, LDL, VLDL, triglycerides, blood cholesterol, speed, agility, muscular power and balance be significantly improved through plyometric training, resistance training and combined training which was in agreement with the previous researches. In the light of the above findings, the following recommendations are made.

1. Efforts may be taken to include plyometric training, resistance training and combined training in the physical education curriculum of the college women as it improves overall biochemical and motor fitness variables.
2. Efforts may be taken by coaches, sports scientists and educational authorities to include plyometric, resistance and combined training in the training schedules of athlete preparation.
3. Advantages of plyometric, resistance and combined training may be popularized among college women for their all round development of biochemical and motor fitness levels.

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

During the course of research, the investigator come across different ideas and suggestions that can be looked into by future researchers. Some of the important ones are detailed hereunder.

1. A separate research to find out the effect of plyometric training, resistance training and combined on physiological variables and strength variables of the college women men may be under taken.

2. A similar study may be conducted among college sportswomen to find out the effect of plyometric training, resistance training and combined training on their physical fitness levels and skills of college women.
3. Since this study covered the college women only, a similar research may be undertaken among college men to find out the effect of plyometric, resistance and combined training.
4. A comparative effect of resistance training with weights and other modes of resistance training may be under taken to throw more lights on the usefulness and purposes of resistance training.