CHAPTER-5
SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary-
The use of word “Kin-anthropometry” has been gaining more popularity in the recent years. Kin-anthropometry is a science which deals with measurements of body and those body parts which are related to kinetics and kinematics. The word kin-anthropometry is an acronym of three Greek words “Kineein” means to move, “Anthropos” means man and “Metreein” means to measure. Ross et al. (1978) defined kin-anthropometry as the application of body measurements to the study of human size, shape, proportion, composition, maturation and gross functions so as to help to understand human movement in relation to growth, exercise, performance and nutrition. International Society for the advancement of Kin-anthropometry (IASK) defined kin-anthropometry as, “Scientific specialization dealing with the measurement of humans in a variety of morphological perspective, its application to movement and those factors which influence movement including components of body build, body measurements, proportions, composition, shape, maturation, motor abilities and cardio-respiratory capacities, physical activity, including recreational activity as well as nationally specialized sports performance.”

5.1.1 STATEMENT OF THE PROBLEM
“A COMPARATIVE STUDY OF KIN-ANTHROPOMETRIC CHARACTERISTICS OF DIFFERENT LEVEL TRIPLE JUMPERS”

5.1.2 OBJECTIVES
1. To find out the State & National Level Triple jumpers performance according Kin-anthropometric measurement.
2. To find out Kin-anthropometric is defined as the study of human size, shape, proportion, composition, maturation and gross function in order to understand growth exercise performance and nutrition.
3. To Find out Kin-anthropometry can be defined as the quanlatatic interface between anatomy and physiology or between human structure and function.
5.1.3 ANALYSIS OF HYPOTHESIS

As per the result found in the study, I found that in all the selected anthropometric measurement the national level triple jumpers were better than state level triple jumblers. Hence it is found that there is a significant difference in all selected anthropometric measurement.

The assumed hypothesis "There will be no significant difference among the triple jumpers of different level" is rejected on the basis of results found.

5.1.4 DELIMITATION OF THE STUDY

1. The study was conducted on male triple jumpers only.

2. The total number of subjects for this study was 100 athletes. (50 State Level & 50 National Level Jumpers.)

3. The data for this proposed study was collected from coaching camps and various training centers.

4. The study was controlled to various. Specific skin, folds, bone, height, weight and few others anthropometric measurement.

Kin-anthropometric assessment

Instruments :

- **Skinfold calipers**: The preferred instruments are the hardened caliper the slim guide skin fold calipers or an alternate model is the large caliper.

- **Anthrometric tape**: The tape of choice is keuffel and esser whiteface steel tape.

- **Vernier calipers**: Used to measure internal and external diameter or width of an object and depth

Definitions of Operational Terms

**Anthropometry**: Branch of science concerned with comparative measurements of the human body, its parts, and its proportions and composition.
Body Composition: is used to describe the percentages of fat, bone and muscle in human bodies.

Lean Body Mass: The total body weight minus the fat mass. Lean body mass consists of water, bones, collagen, and muscle.

Percentage Body fat: This describes the percentage of total weight that is composed of fat. Body fat percentage is that percentage of body mass that is not made up of bone, muscle, connective tissue and fluids; that is, everything else. This is referred to as 'fat-free mass'.

Body fat: It is body mass not made up of bones, muscles, organs or water.

Body Mass Index (BMI): A measurement of the amount of body fat and lean body mass. It is calculated by dividing a person’s weight in kilograms by their height in meters.

Endomorphy: It is the first component of somatotyping. It refers to the relative fatness of the physique.

Mesomorphy: It is the second component of somatotyping. It refers to the relative musculoskeletal robustness in relation to stature.

Ectomorphy: It is the third component of somatotyping. It refers to the relative linearity of and fragility of the body.

Triple Jump: It is also known as 'Hop, Step and Jump. Athlete runs with maximum controlled speed, takes off from the take off board with strong foot. Performing the hop, step and jump he tries to cover the maximum distance. The common techniques of triple jump are flat, steep and mixed techniques.

National level triple jumpers had significantly greater height, sitting height, leg length, upper leg length, lower leg length and arm length as compared to state level triple jumpers. Similarly, biacromial, bi-iliocristal, bicondylar femur, chest, abdominal and calf circumferences were also found greater in national level triple jumpers. However, no significant differences were reported in weight, BMI, forearm
length, upper arm, forearm and thigh circumferences, wrist diameter and all skinfold measurements between the two groups.

In body composition, lean body mass was significantly greater in national level triple jumpers. No significant differences were observed between national and state level triple jumpers in relation to body density, percentage body fat and total body fat. In case of somatotyping, endomorphy was significantly national in state level triple jumpers and no significant differences were observed between national and state level triple jumpers in relation to mesomorphy and ectomorphy.

5.2 CONCLUSION

On the basis of findings of the present study, following conclusions have been drawn:

1. Conclusion hypothesis testing Research scholar was limited knowledge, achievement, related literature and experts opinion then after hypothesis of the study. It hypothesized that thus were significant difference among the triple jumpers of different level.

2. The national level triple jumpers were significantly taller and heavier and had significantly greater segment lengths, circumferences and diameters than the state level throwers. Whereas, state level triple jumpers had significantly greater skinfold measurements.

3. The lean body mass and body density were found significantly national in national level triple jumpers whereas state level triple jumpers showed significantly greater values in percentage body fat.

4. In somatotyping, the endomorphic component was found significantly greater in state level triple jumpers whereas mesomorphic component was significantly dominated by national level triple jumpers.

5. The national level triple jumpers were found significantly taller, heavier and they had significantly greater values in all segment lengths, circumferences and diameters than the state level triple jumpers. However, the national level
triple jumpers had lesser skinfold measurements than the state level triple jumpers.

6. The national level triple jumpers had significantly national values in body density and lean body mass. Whereas, percentage body fat was reported significantly in national and state level triple jumpers.

7. The physique of national level triple jumpers was characterized by significantly national mesomorphy and state endomorphy as compared to state level triple jumpers.

8. The different components of body composition were significantly varying among the various groups of triple jumpers.

9. The significant differences were found in endomorphy, mesomorphy and ectomorphy among the different groups of triple jumpers.

10. Endomorphic and mesomorphic components were significantly in national. Whereas, jumpers had significantly national value of ectomorphic component.

5.3 RECOMMENDATIONS

In the light of the findings of the present study the following recommendations seem to be acceptable for further studies:

1. This study can be further extended for the comparative study of field athletes of university and International level athletes.

2. Physical education teachers and coaches can use the results of this study as an aid in screening, identification and selecting triple jumpers.

3. National performance in sports depends upon many factors such as psychological, sociological, physiological, physical fitness etc. These variables should be incorporated in similar studies to know the relationship of these variables with kinanthropometric variables and performance.

4. The study can be extended for comparative study of various sports disciplines so that their differences with each other can be examined.
5. The similar study may be conducted by selecting greater number of subjects belonging to different level of performance and the gender other than those employed in the present study.

6. It is suggested that a longitudinal study with the subjects employed in this research work may be carried out in order to find the changes in contributing variables and their effect on the performance of triple jumpers.

7. In the training program for triple jumpers, emphasis must be laid on improvement of those kin-anthropometric characteristics, somatotyping and body composition which have been found to be significantly related to national level athletes.