Chapter V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of the study was to determine the influence of selected anthropometric measurements and body types on selected track and field events, and thereby stimulate coaches, sports scientists, and trainers to instill and communicate the importance of physique on sports performance.

The randomly selected subjects of this study comprised of 180 athletes, 90 males and 90 females who took part in the south zone Inter-Varsity and in the All India Inter-University Athletic Meet at Thiruchendur (Tamil Nadu) and Chandigarh (Punjab) in the years 1989 and 1990 respectively. For the study, the males and females of 18 to 24 years of age were studied separately under three heads namely sprinters, jumpers and throwers with $n=30$ each.

The anthropometric measurements under investigation included height, weight, shoulder width or bisacromial diameter, hip-width or bisiliac diameter,
elbow or bicondylar femur diameter, upper arm circumference, forearm circumference, calf girth, thigh girth, leg length and arm length. And to study body types using Heath-Carter somatotype method, the following were taken into consideration. Balanced Endomorphy, Mesomorphic Endomorphy, Mesomorph Endomorphy, Endomorphic Mesomorph, Balanced Mesomorph, Ectomorphic Mesomorph, Mesomorph Ectomorph, Mesomorphic Ectomorph, Balanced Ectomorph, Endomorphic Ectomorph, Endomorph Ectomorph, Ectomorphic Endomorph and Central.

All the anthropometric measurements were recorded in centimeters whereas to study body types, to study the influence of each of the above mentioned variables on the selected three track and field events for both the male and female sections, sprinters, jumpers and throwers were separately investigated upon.

The data thus collected was manipulated using one way analysis of variance. When the analysis of variance resulted in a significant 'f' ratio, post-hoc comparison test was computed to study the significance of difference between the paired means. The analysis of variance was tested for significance at .05 level.

Analysis of data on throwers revealed that the male and female throwers measurements on height, weight,
bisacromial diameter, bisiliac diameter, bicondyler humerus diameter, bicondylar femur diameter, upper arm circumference, forearm circumference, calf circumference and thigh circumference were maximum. Female throwers were found to have the maximum leg length whereas in case of male throwers, their leg length was lesser than the jumpers but more than the sprinters. However the arm length of both male and female throwers were more than the sprinters but lesser than the jumpers.

In the case of male and female jumpers, arm length was maximum for both. Male jumpers measured maximum on leg length too. Measurements on height, weight, and bisacromial diameter were more than the sprinters in case of both male and female jumpers. And bicondylar femur diameter for males was found to be more than the sprinters. Male jumpers measured least on bisiliac diameter, bicondylar humerus diameter, upper arm circumference, forearm circumference, calf circumference and thigh circumference. Female jumpers measured least on bicondylar femur diameter. And on bisiliac diameter, bicondylar humerus diameter, upper arm circumference, forearm circumference, calf circumference, thigh circumference, and leg length the measurements were more than the sprinters.

In the case of sprinters, measurements on height, weight, bisacromial diameter, leg length and arm
length were found to be the least for both males and females in comparison to jumpers and throwers. Female sprinters were found to have least bisiliac diameter, bicondylar humerus diameter, upper arm circumference, forearm circumference, calf circumference and thigh circumference. But it was only on bicondylar femur diameter that female sprinters measured lesser than the jumpers. Whereas in male sprinters, bisiliac diameter, bicondylar humerus diameter, upper arm circumference, forearm circumference, calf circumference and thigh circumference were more than the jumpers.

The results of Heath and Carter's somatotype classification on all the three categories of athletes ie sprinters, jumpers and throwers revealed that in the male category of sprinters, they were more mesomorphic ectomorph about 46.67%, followed by ectomorphic mesomorph 20% and endomorphic ectomorph of 16.67%. In the female category of sprinters, approximately 36.67% were balanced ectomorph, 26.67% were mesomorphic ectomorph and 16.67% were mesomorphic ectomorph.

In the male category of high jumpers they were more of mesomorphic ectomorph, approximately 56.67% followed by balanced ectomorph of 23.33% of the total subjects. Whereas in the female category also 36.67% were of mesomorphic ectomorph followed by endomorphic
ectomorph of approximately 23.33% and balanced ectomorph of approximately 20%.

With regards to throwers in the male category, they were more of ectomorphic mesomorph approximately, 26.67%, followed by endomorphic mesomorph and balanced mesomorph of approximately 20% each. In the female category, an approximate of 23.33% each were of mesomorphic endomorph and endomorphic ectomorph followed by balanced endomorphy.

Conclusions

From the above findings, discussion and within the limitations of the present study, the following conclusions may be drawn.

1. The anthropometric measurement of the three groups of athletes namely the sprinters, the jumpers and throwers varied significantly from each other for each of the measures under investigation. To be more specific, the throwers were the tallest and heaviest with the anthropometric measurements recorded on them to be greater than the jumpers and sprinters. The sprinters recorded the least. So, it can be stated that each of the three events demand specific physiques.
Hence it can be safely concluded that an athlete for superior performance in any sport should be selected on the basis of physical structure and body size he possesses.

2. A glance into the body types of the selected athletes namely the sprinters, the jumpers and the throwers also reveal that there is a marked difference in the body types for each of the above mentioned groups of athletes.

3. It can also be soundly stated that poor physique is one of the reasons of poor performance by athletes.

**Recommendations**

On the basis of experience of the present research work and the findings of this study, here are some recommendations for the physical educationists, coaches and sports scientists.

1. A similar study may be replicated to compare the influence of the selected anthropometric measurements and body types on selected games and sports.

2. The present study may be extended to application of advanced statistical techniques namely
multiple correlation and regression equations in order to develop prediction equations.

3. The study may be repeated with high performance sports persons and performance models be developed based on independent anthropometric measurements.

4. A similar study with variables other than those mentioned in this, including body composition and motor components may be investigated upon.