Chapter V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the various physical, physiological and socio-economic status profiles of the university athletes participating in sprint events, cross country running, basketball and volleyball for both sportsmen and sportswomen and to compare these groups on the selected variables.

For the purpose of this study 80 sprinters (40 males and 40 females), 60 cross country runners (30 males and 30 females), 72 volleyball players (36 males and 36 females) and 72 basketball players (36 males and 36 females) from the universities of Kerala State who had represented their respective universities were selected as the subjects. The following physical, physiological, psychological and sociological variables were selected for the study: speed (50 metres run), leg power (vertical jump), shoulder strength (pull-ups),
speed of movement (Nelson's speed of movement test), agility (4 x 10 metres shuttle run), weight, height, leg length, chest girth, thigh girth, calf girth, biceps girth, fat percentage, lean body weight, ponderal index, anaerobic power, aerobic capacity, vital capacity, haemoglobin content, resting pulse rate, blood pressure, personality factors (Neuroticism-extraversion), achievement motivation and socio-economic status. One way analysis of variance and Scheffe's post-hoc test was used for analysing data.

The result of the study indicated that the physical, physiological, psychological and socio-economic status profiles of sprinters, cross-country runners, basketball players and volleyball players were distinct from each other and the comparison between different groups showed significant difference.

In case of sportsmen; speed (F = 113.67) of sprinters (M = 6.27) was significantly better than cross-country runners (M = 7.01), basketball players (M = 7.16) and volleyball players (M = 7.08). In leg power (F = 28.22) volleyball players (M = 62.14) were significantly better than cross-country runners (M = 51.83) and basketball players (M = 57.72),
sprinters ($M = 59.55$) were significantly better than cross-country runners. In agility, ($F = 9.65$), volleyball players ($M = 10.211$) were significantly better than cross country runners ($10.79$), sprinters ($M = 10.452$), and basketball players ($10.677$). Sprinters were significantly more agile than cross country runners. In shoulder strength ($F = 9.65$) volleyball players ($M = 9.64$) were better than sprinters ($M = 7.65$), cross country runners ($M = 6.77$) and basketball players ($M = 7.47$). In speed of movement ($F = 8.07$), volleyball players ($M = .2082$) and sprinters ($M = .2087$) were better than cross country runners ($M = .219$) and basketball players ($M = .2161$).

Body weight ($F = 49.31$) of volleyball players ($M = 67.67$) and basketball players ($M = 66.42$) were significantly better than sprinters ($M = 61.76$) and cross country runners ($54.63$) and sprinters were significantly heavier than cross country runners. Height ($F = 35.78$) of volleyball players ($M = 179.65$) and basketball players ($M = 181.00$) were significantly better than sprinters ($M = 173.45$) and cross country runners ($M = 169.70$) and sprinters were found to be
significantly taller than cross country runners. Leg length \( F = 32.806 \) of volleyball players \( M = 96.694 \) and basketball players \( M = 97.194 \) were significantly better than sprinters \( M = 92.713 \) and cross country runners \( M = 89.483 \) and sprinters were found to have significantly longer leg than cross country runners. Chest girth \( F = 85.806 \) of volleyball players \( M = 84.944 \) was significantly better than sprinters \( M = 83.825 \) and cross country runners \( M = 81.616 \), sprinters and basketball players \( M = 84.944 \) had significantly larger chest girth than cross country runners. Thigh girth \( F = 43.233 \) of volleyball players \( M = 53.792 \) was significantly better than sprinters \( M = 52.263 \) and cross country runners \( M = 48.417 \), sprinters and basketball players \( M = 52.86 \) had significantly larger thigh girth than cross country runners. Calf girth \( F = 14.464 \) of sprinters \( M = 35.025 \), basketball players \( M = 35.514 \) and volleyball players \( M = 34.931 \) were significantly larger than cross country runners \( M = 32.983 \). Biceps girth \( F = 25.164 \) of sprinters \( M = 28.675 \) basketball players \( M = 27.772 \) and volleyball players
were significantly larger than cross country runners \( M = 25.883 \) and volleyball players had significantly larger biceps girth than basketball players. Volleyball players \( M = 12.108 \) and sprinters \( M = 11.455 \) had significantly higher percentage of body fat \( F = 9.621 \) than cross country runners \( M = 9.973 \). Basketball players \( M = 10.711 \) had significantly less amount of body fat than volleyball players. Cross country runners \( M = 90.088 \) had significantly higher lean body weight \( F = 9.226 \) than sprinters \( M = 88.723 \) and volleyball players \( M = 87.868 \). Basketball players \( M = 89.185 \) had significantly higher lean body weight than volleyball players. Ponderal index \( F = 9.101 \) of cross country runners \( M = 44.801 \) and basketball players \( M = 44.685 \) are significantly higher than sprinters \( M = 43.923 \) cross country runners had higher ponderal index than volleyball players \( M = 44.167 \).

Anaerobic power \( F = 44.875 \) of volleyball players \( M = 76.436 \) are significantly higher than basketball players \( M = 71.506 \) and cross country runners \( M = 59.369 \). Basketball players and sprinters
(M = 74.838) were significantly better than cross country runners. Aerobic capacity (F = 291.655) of cross country runners (M = 3.688) were significantly better than basketball players (M = 2.75), sprinters (M = 2.705) and volleyball players (M = 2.565). Basketball players and sprinters were significantly better than volleyball players. There was no significant difference in the vital capacity (F = 1.876) of sprinters (M = 3.58), cross country runners (3.79), basketball players (M = 3.63) and volleyball players (M = 3.73). Sprinters (M = 60.024) basketball players (M = 59.5), volleyball players (M = 61.194) had significantly higher Resting pulse rate (F = 15.33) than cross country runners (M = 55.3). There was no significant difference in Systolic (F = .549) and Dyastolic (F = .396) Blood pressure of sprinters (M = 118.35, 79.93), cross country runners (M = 118.4, 79.2), basketball players (M = 118.77, 78.7) and volleyball players (M = 119.94, 79.33). Haemoglobin content (F = 4.52) of cross country runners (M = 14.63) were significantly higher than volleyball players (M = 14.04). There was no significant difference in
the haemoglobin content of sprinters (M = 14.357), basketball players (M = 14.375) and cross country runners.

Cross country runners (M = 10.8) were significantly more neurotic (F = 4.353) than basketball players (M = 8.88) sprinters (M = 10.00) and volleyball players (M = 9.58) showed no significant difference with other groups. Basketball players (M = 12.083) were significantly more extrovert (F = 3.961) than cross country runners (M = 10.2) sprinters (M = 11.4) and volleyball players (M = 11.33) showed no significant difference with other groups:
Achievement motivation (F = 3.448) of cross country runners (M = 30.2) was significantly higher than basketball players (M = 27.2). Sprinters (M = 28.2) and volleyball players (M = 28.611) showed no significant difference with other groups.

The socio-economic status (F = 8.964) of basketball players (M = 29.861) was significantly higher than sprinters (M = 24.725) and cross country runners (M = 22.1). Volleyball players (M = 27.801) had significantly higher socio-economic status than cross country runners.
In case of sportswomen; speed ($F = 148.4$) of sprinters ($M = 6.85$) was significantly better than cross country runners ($M = 7.71$), basketball players ($M = 7.85$) and volleyball players ($M = 7.70$). In leg power ($F = 32.59$) volleyball players ($M = 43.81$) were significantly better than cross country runners ($M = 35.63$) basketball players ($M = 37.75$) and sprinters ($M = 40.65$) sprinters were significantly better than cross country runners and basketball players. In agility ($F = 3.086$) sprinters ($M = 10.982$) were significantly better than cross country runners ($M = 11.186$). In case of basketball players ($M = 11.161$) and volleyball players ($M = 10.997$) no significant difference was found with other groups. In shoulder strength ($F = 10.17$) volleyball players ($M = 28.89$) were significantly better than cross country runners ($M = 21.63$) sprinters ($24.63$) and basketball players ($M = 24.33$). In speed of movement ($F = 4.236$) volleyball players ($M = .2206$) sprinters ($M = .2202$) and basketball players ($M = .2203$) were significantly better than cross country runners ($M = .2282$).
Body weight (F = 30.43) of volleyball players (M = 55.02) and basketball players (M = 54.42) was significantly better than cross country runners (M = 46.98) and sprinters (M = 51.29). Sprinters were significantly heavier than cross country runners. Height (F = 29.81) and leg length (F = 16.167) of volleyball players (M = 167.63 and 88.86) and basketball players (M = 168.19 and 88.56) was significantly better than sprinters (M = 162.46 and 85.46) and cross country runners (M = 159.68 and 84.517) chest girth (F = 25.295) of volleyball players (M = 75.069) and basketball players (M = 73.277) were significantly better than cross country runners (M = 70.00) and sprinters (M = 71.4), volleyball players were significantly better in chest girth than basketball players. Thigh girth (F = 17.623) of basketball players (M = 50.86), sprinters (M = 50.575) and volleyball players (M = 51.569) were significantly higher than cross country runners (M = 47.73). In Calf girth (F = 10.396) volleyball players (M = 33.93) and basketball players (M = 32.68) were significantly better than cross country runners (M = 32.2). The calf girth of volleyball
players were also found to be significantly better than sprinters ($M = 32.763$). In Biceps girth ($F = 10.898$) volleyball players ($M = 25.57$) and basketball players ($M = 25.33$) were significantly better than cross country runners ($M = 23.967$). The biceps girth of volleyball players were also found to be significantly better than sprinters ($24.638$). In fat percentage ($F = 29.33$) volleyball players ($M = 24.253$), basketball players ($M = 21.686$) and sprinters ($M = 23.763$) were significantly higher than cross country runners ($M = 20.22$). Sprinters and volleyball players had more fat than basketball players. Cross country runners ($M = 79.69$) and basketball players ($M = 78.32$) had more lean body weight ($F = 25.7$) than sprinters ($M = 76.31$) and volleyball players ($M = 75.9$). Ponderal index ($F = 4.045$) of basketball players ($M = 44.438$) were significantly higher than sprinters ($M = 43.798$). No significant relation was found with volleyball players ($M = 44.155$) and cross country runners ($44.335$) to other groups.

Anaerobic power ($F = 16.855$) of volleyball players ($M = 57.302$), basketball players ($M = 53.386$)
and sprinters (M = 55.177) were significantly higher than cross country runners (M = 49.612). Volleyball players were also found to have significantly higher anaerobic power than basketball players. Aerobic capacity (F = 88.068) of cross country runners (M = 2.866) were significantly higher than sprinters (M = 2.58), basketball players (M = 2.479) and volleyball players (M = 2.279). Sprinters were better in aerobic capacity than basketball players and volleyball players basketball players were better than volleyball players. Resting pulse rate (F = 11.419) of cross country runners (M = 60.766) were significantly lower than sprinters (M = 64.175), basketball players (M = 63.33) and volleyball players (M = 65.67). Volleyball players had higher resting pulse rate than basketball players. Haemoglobin content (F = 4.173) of cross country runners (M = 13.866) were significantly higher than volleyball players (M = 13.26). No significant differences were found between basketball players (M = 13.615) and sprinters (M = 13.303) and other groups. No significant differences were found in blood pressure (systolic (F = .568) and diastolic (F = .736) between sprinters
(M = 118.83 and 78.85) basketball players (M = 119.16 and 78.33), volleyball players (M = 120.33 and 78.77) and cross country runners (M = 118.53 and 77.37). No significant difference were found in vital capacity (F = .958) between sprinters (M = 2.868), basketball players (M = 2.838) volleyball players (M = 2.817) and cross country runners (M = 2.923).

No significant difference was found in Neurotism (F = .558) between sprinters (M = 10.475) volleyball players (M = 10.972) basketball players (M = 10.666) and cross country runners (M = 11.166). Volleyball players (M = 11.083) and basketball players (M = 11.472) were significantly higher in extraversion (F = 5.643) than cross country runners (M = 9.266). No significant relation was found with sprinters (M = 10.675) to other groups. In Achievement motivation (F = 1.71) no difference was found among sprinters (M = 27.75) basketball players (M = 26.277), volleyball players (M = 27.388) and cross country runners (M = 28.4).

Socio-economic status (F = 4.492) of basketball players (M = 27.02) and volleyball players (M = 26.03)
were significantly higher than cross country runners (M = 21.1). No significant differences were found in socio-economic status between sprinters (M = 24.13) and other groups.

**Conclusions**

1. Volleyball players and basketball players were heavier and taller than sprinters and cross country runners and were higher in the profiles of anthropometric measurements.

2. Cross country runners and basketball players had less percentage of fat and more lean body weight. They were higher on the ponderal index also.

3. Volleyball players had better leg power, shoulder strength and agility than the other groups. Sprinters were faster than cross country runners, basketball players and volleyball players. Sprinters and basketball players were also better in speed of movement.

Volleyball players had better anaerobic power than cross country runners, basketball players and
sprinters, whereas cross country runners had higher aerobic capacity and haemoglobin content than the other groups and also they had the least resting pulse rate.

5. No differences were found among the different groups in vital capacity and blood pressure.

6. Cross country runners were more neurotic than the other groups whereas basketball players were more extrovert when compared to other groups.

7. Cross country runners were higher in achievement motivation than sprinters, volleyball players and basketball players.

8. Basketball players had better socio-economic status than sprinters and cross country runners.

**Recommendations**

In the light of the results of the present study the following recommendations are made:

1. In the training programmes for sprinters, cross country runners, volleyball and basketball
players more emphasis may be laid on the improvement of different qualities which are dominated by each of these groups.

2. It is also recommended that while selecting teams physical education teachers and coaches may give due consideration to those athletes with dominant factors as reflected in the results of this study.

3. It is recommended that a similar study may be conducted by selecting other sports disciplines which are not included in this study.

4. A similar study can be conducted by selecting other variables which are not included in this study.

5. It is recommended that similar studies can be conducted by selecting sportsmen and sportswomen participating at different levels of competition.