Chapter V

Summary, Conclusions and Recommendations

SUMMARY

The purpose of the study was to determine the significance of physical and psychological variables of different level gymnasts.

The data pertaining to the physical and psychological variables were collected from the subjects belonging to National Sports Academy, Allahabad, B.B.S. Sports College, Gorakhpur and Eklavya Sports Stadium, Agra. 60 players were selected for the study.

The Physical variables (Speed, Flexibility, Agility, Explosive leg Strength and Grip Strength) and Psychological variables (Mood Profile, Sports Commitment, and Locus of Control) were selected for the present study.

To collect the data, selected physical variables were taken on each subject individually during practice time. Speed was measured by using 50 yard dash; the score was recorded in seconds. Flexibility was measured by using Sit and Reach test, the score was recorded in centimeters. Agility was measured by using 4x10m Shuttle run test, the score was recorded in seconds. For Explosive leg strength Standing Broad Jump and Vertical jump tests were used as criteria for measuring leg strength and the score for distance was recorded in centimeters. Grip strength (Right and Left Hand) was measured by Grip dynamometer and score was recorded in kilograms. Psychological questionnaires were administered to the subjects for Psychological variables. Mood was measured by Profile of Mood States developed by Peter C. Terry. Sports Commitment was measured by Sports Commitment Questionnaire developed by Tara Scanlan. Locus of Control was measured by Locus of Control Questionnaire developed by Rotter.

All the selected subjects for the study were informed about the aims and objectives of the present work and requested for their cooperation. The subjects were explained about different variables required for the study with necessary instructions.
The required data for different characteristics of players were collected during the course of two to four days. The scholar contacted the player personal and their sincere cooperation was solicited. Through, no time limit was set for filling-up of the questionnaire, but the players were requested to respond as quickly as possible, once the instructions were clearly understood by them. As soon as team or group of players completed one questionnaire, another was given to them. For the data analysis, descriptive statistics, two way analysis of variance and Product Moment Method of Correlation were used and the level of significance was set at .05 levels.

CONCLUSIONS

Within the limitations of the present study the following conclusions were drawn

SECTION - ONE

Physical Variables
1. Senior International gymnasts were having greater Speed (7.42±0.57) in comparison to National (8.25±0.58) and State level (9.24±0.58) gymnasts.
2. Junior International gymnasts were having greater Speed (7.86±0.69) in comparison to National (8.64±1.09) and State (8.61±0.63) level gymnasts.
3. Senior National gymnasts were having greater Flexibility (30.65±3.09), in comparison to International level gymnasts (30.45±3.96) and State level gymnasts (18.30±4.98).
4. Junior National gymnasts were having greater Flexibility (28.60±3.08) in comparison to International (26.00±4.78) level gymnasts and state level gymnasts (21.40±4.24).
5. Senior International level gymnasts were having greater Agility (9.64±0.45) in comparison to National level gymnasts (9.55±0.16) and State level gymnasts (10.35±0.41).
6. Junior International level gymnasts were having greater Agility (9.49±0.22) in comparison to National level gymnasts (9.31±0.27) and State level gymnasts (10.51±0.26).

7. Senior International level gymnasts were having greater Explosive leg strength (Standing Broad Jump) (2.42±0.16) in comparison to National level gymnasts (2.33±0.10) and State level gymnasts (2.26±0.11).

8. Junior International level gymnasts were having greater Explosive leg strength (Standing Broad Jump) (2.24±0.13) in comparison to National level gymnasts (2.16±0.17) and State level gymnasts (1.73±0.11).

9. Senior International level gymnasts were having greater Explosive leg strength (Vertical Jump) (0.47±0.11) in comparison to National level gymnasts (0.40±0.10) and State level gymnasts (0.38±0.79).

10. Junior International level gymnasts were having greater Explosive leg strength (Vertical Jump) (0.48±0.99) in comparison to National level gymnasts (0.37±0.86) and State level gymnasts (0.33±0.04).

11. Senior State level gymnasts were having greater Grip Strength (Right Hand) (46.40±4.52) in comparison to International level gymnasts (40.70±7.80) and National level gymnasts (35.90±6.04).

12. Junior International level gymnasts were having greater Grip Strength (Right Hand) (37.50±2.12) in comparison to National level gymnasts (28.30±7.42) and State level gymnasts (17.50±5.35).

13. Senior State level gymnasts were having greater Grip Strength (Left Hand) (43.90±5.15) in comparison to International level gymnasts (39.30±6.09) and National level gymnasts (36.20±2.82).

14. Junior International level gymnasts were having greater Grip Strength (Left Hand) (36.50±3.06) in comparison to National level gymnasts (36.50±3.06) and State level gymnasts (14.70±4.32).
Summary, Conclusions and Recommendations

Psychological Variable

Mood Profile

(Senior Group)

1. Senior State level gymnasts were having lesser Anger (Mood Profile) (.80±1.31) in comparison to International level gymnasts (1.50±1.71) and National level gymnasts (2.30±1.56).

2. Senior State level gymnasts were having lesser Confusion (Mood Profile) (.90±1.19) in comparison to International level gymnasts (2.00±1.82) and National level gymnasts (2.90±1.96).

3. Senior International level Gymnasts were having lesser Depression (Mood Profile) (1.30±1.76) in comparison to State level Gymnasts (2.30±1.94) and National level Gymnasts (2.80±1.76).

4. Senior National level Gymnasts were having lesser Fatigue (Mood Profile) (2.40±3.06) in comparison to International level Gymnasts (2.60±2.54) and State level Gymnasts (3.30±1.76).

5. Senior National level Gymnasts were having lesser Tension (Mood Profile) (2.50±1.77) in comparison to International level Gymnasts (2.60±2.06) and State level Gymnasts (3.00±2.78).

6. Senior State level Gymnasts were having greater Vigour (Mood Profile) (10.30±1.42) in comparison to National level Gymnasts (9.70±3.30) and International level gymnasts (9.50±3.47).

Mood Profile

(Junior Group)

1. Junior National level gymnasts were having lesser Anger (Mood Profile) (1.00±1.49) in comparison to International level gymnasts (1.60±1.83) and State level gymnasts (2.30±1.94).

2. Junior National level gymnasts were having lesser Confusion (Mood Profile) (1.90±1.96), in comparison to International level gymnasts (2.00±1.63), and State level gymnasts

3. Junior International level Gymnasts were having lesser Depression (Mood Profile) (1.20±1.39), in comparison to National level Gymnasts (1.30±1.41), and State level Gymnasts (2.80±2.25).
4. Junior National level Gymnasts were having lesser Fatigue (Mood Profile) (1.00±1.24) in comparison to International level Gymnasts (1.30±2.26), and State level Gymnasts (2.70±2.66).

5. Junior International level Gymnasts were having lesser Tension (Mood Profile) (1.30±1.05) in comparison to National level Gymnasts (1.80±1.75) and State level Gymnasts (3.00±1.94).

6. Junior National level Gymnasts were having greater Vigour (Mood Profile) (10.00±3.43) in comparison to State level Gymnasts (9.90±2.50) and International level gymnasts (9.40±2.01).

**Sports Commitment**

**(Senior Group)**

1. Senior National level gymnasts were having greater Sports Commitment (5.50±0.70) in comparison to International level gymnasts (5.40±0.51) and State level gymnasts (5.00±0.94).

2. Senior International level gymnasts were having greater Sports Enjoyment (Sports Commitment) (3.60±0.516), in comparison to National level gymnasts (3.50±0.52) and State level gymnasts (3.20±0.78).

3. Senior National level gymnasts were having greater Involvement Alternatives (Sports Commitment) (3.60±0.51), in comparison to International level gymnasts (3.00±0.81) and State level gymnasts (3.00±0.81).

4. Senior National level gymnasts were having greater Personal Investment (Sports Commitment) (2.60±0.51) in comparison to International level gymnasts (2.50±0.52) and State level gymnasts (2.20±0.42).

5. Senior State level gymnasts were having greater Social Constraint (Sports Commitment) (3.70±2.21) in comparison to International level gymnasts (3.20±2.69) and National level gymnasts (2.80±1.81).

6. Senior International level gymnasts were having greater Involvement Opportunity (Sports Commitment) (7.00±2.00) in comparison to National level gymnasts (3.90±2.80) and State level gymnasts (2.80±1.54).
Summary, Conclusions and Recommendations

Sports Commitment

(Junior Group)

1. Junior International level gymnasts were having greater Sports Commitment (6.50±1.95) in comparison to National level gymnasts (5.20±0.78) and State level gymnasts (4.00±0.47).

2. Junior International level gymnasts were having greater Sports Enjoyment (Sports commitment) (5.50±2.12) in comparison to National level gymnasts (3.60±0.51), and State level gymnasts (3.60±0.69)

3. Junior International level gymnasts were having greater Involvement Alternatives (Sports Commitment)(5.90±2.23) in comparison to State level gymnasts (3.60±0.51) and National level gymnasts (3.40±0.69).

4. Junior International level gymnasts were having greater Personal Investment (Sports Commitment) (6.30±.2.11) in comparison to State level gymnasts (2.60±0.51) and National level gymnasts (2.30±1.05).

5. Junior State level gymnasts were having greater Social Constraint (Sports Commitment) (4.90±1.52) in comparison to International level gymnasts (2.90±1.79) and National level gymnasts (2.40±2.11).

6. Junior International level gymnasts were having greater Involvement Opportunity (Sports Commitment) (7.90±2.37) in comparison to National level gymnasts (3.90±0.31) and State level gymnasts (3.00±1.33).

Locus of Control

1. Senior National level gymnasts were having better Locus of Control (7.40±3.09) in comparison to State level gymnasts (5.50±0.52) and International level gymnasts (3.80±2.29).

2. Junior International level gymnasts were having better Locus of Control (8.70±1.56) in comparison to State level gymnasts (8.60±1.41) and National level gymnasts (8.200±.2.97).
SECTION – TWO

1. Significant differences were found in Senior International and State level gymnasts, National and State level gymnasts Junior International and National level gymnasts, National and State level gymnasts in relation to Speed whereas the observed sequence was found that International > National > State in Senior Group and International > State > National in Junior Group.

2. Insignificant differences were found in senior International and National level gymnasts, Junior International and State level gymnasts, National and State level gymnasts in relation to Speed.

3. Significant differences were found in Senior International and State level, National and State level gymnasts and Junior International and State level and National and State level gymnasts in relation to Flexibility whereas the observed sequence was found that National > International > State in Senior Group and Junior Group.

4. Insignificant differences were found in Senior and Junior International and National level gymnasts in relation to Flexibility.

5. Significant differences were found in Senior International and State level gymnasts and Junior International and State, National and State level gymnasts in relation to Agility whereas the observed sequence was found that International > National > State in Senior Group and Junior Group.

6. Insignificant differences were found in Senior International and National level gymnasts, National and State level gymnasts and Junior National and State level gymnasts in relation to Agility.

7. Significant differences were found in Senior International and State and Junior International and State level gymnasts, National and State level gymnasts in relation to Explosive leg strength (Standing Broad Jump) whereas the observed sequence was found that International > National > State in Senior and Junior Group.
8. Insignificant differences were found in Senior and Junior International and National level gymnasts and Junior National and State level gymnasts in relation to Explosive leg strength (Standing Broad Jump).

9. Significant differences were found in Senior International and State level gymnasts and Junior International and National level, International and State level gymnasts in relation to Explosive leg strength (Vertical Jump) whereas the observed sequence was found that International > National > State in Senior and Junior Group.

10. Insignificant differences were found in Senior International and National and Junior National and State level Gymnasts in relation to Explosive leg Strength (Vertical Jump).

11. Significant differences were found in Senior International and State level gymnasts, National and State level gymnast Junior International and National, International and State level gymnasts and National and State level Gymnast in relation to Grip Strength (Right Hand) whereas the observed sequence was found that State > International > National in Senior Group and International > National > State in Junior Group.

12. Insignificant differences were found in Senior International and National level Gymnast in relation to Grip Strength (Right Hand).

13. Significant differences were found in Senior International and State level gymnasts National and State level Gymnasts and Junior International and National, International and State level gymnasts and National and State level Gymnast in relation to Grip Strength (Left Hand) whereas the observed sequence was found that State > International > National in Senior Group and International > National > State in Junior Group.

14. Insignificant differences were found in International and National level Gymnasts in relation to Grip Strength (Left Hand).
15. Significant differences were found in Senior National and State level gymnasts in relation to Anger (Mood Profile) whereas the observed sequence was found that State < International < National in Senior Group and National < International < State in Junior Group.

16. Insignificant differences were found in Senior International and National level, International and State level gymnasts and Junior International and National level gymnasts, International and State level gymnasts, National and State level gymnasts in relation to Anger (Mood Profile).

17. Significant differences were found in Senior National and State level gymnasts and Junior International and State level gymnasts, National and State in relation to Confusion (Mood Profile) whereas the observed sequence was found that State > International > National in Senior Group and National > International > State in Junior Group.

18. Insignificant differences were found in Senior International and National level gymnasts, International and State level gymnasts and Junior International and National level gymnasts in relation to Confusion (Mood Profile).

19. Insignificant differences were found in International, National and State level gymnasts in relation to Depression (Mood Profile).

20. Insignificant differences were found in International, National and State level gymnasts in relation to Fatigue (Mood Profile).

21. Insignificant differences were found in International, National and State level gymnasts in relation to Tension (Mood Profile).

22. Insignificant differences were found in International, National and State level gymnasts in relation to Vigour (Mood Profile).

23. Significant differences were found in Junior International and State level gymnasts, National and State level gymnasts in relation to Sports commitment whereas the observed sequence was found that National > International > State in Senior Group and International > National = State in Junior Group.
24. Insignificant differences were found in Senior International and National level gymnasts, International and State level gymnasts, National and State level gymnasts and Junior International and National level Gymnasts in relation to Sports Commitment.

25. Significant differences were found in Senior International and National level gymnasts; International and State level gymnasts in relation to Sports Enjoyment (Sports Commitment) whereas the observed sequence was found that International > National > State in Senior Group and International > National = State in Junior Group.

26. Insignificant differences were found in Junior International and National level gymnasts, International and State level gymnasts, National and State level Gymnasts in relation to Sports Enjoyment (Sports Commitment).

27. Significant differences were found in Junior International and State level gymnasts in relation to Involvement Alternatives (Sports Commitment) whereas the observed sequence was found that National > International > State in Senior Group and International > State > National in Junior Group.

28. Insignificant differences were found in Senior International and National, International and State, National and State level and Junior International and National, National and State level gymnasts in relation to Involvement Alternatives (Sports Commitment).

29. Significant differences were found in Junior International and National level gymnasts in relation to Personal Investment (Sports Commitment) whereas the observed sequence was found that National > International > State in Senior Group and International > State > National in Junior Group.

30. Insignificant differences were found in Senior International and National, International and State, National and State level and Junior International and State level, National and State level gymnasts in relation to Personal Investment (Sports Commitment).
31. Significant differences were found in Junior International and State, National and State level gymnasts in relation to Social Constraint (Sports Commitment) whereas the observed sequence was found that State > International > National in Senior and Junior Group.

32. Insignificant differences were found in Senior International and National level gymnasts, International and State level, National and State level gymnasts, Junior International and National level gymnasts in relation to Social Constraint (Sports Commitment).

33. Significant differences were found in Senior International and State level gymnasts, National and State level gymnasts and Junior International and State level gymnasts, National and State level gymnasts in relation to Involvement Opportunity (Sports Commitment) whereas the observed sequence was found that International > National > State in Senior and Junior Group.

34. Insignificant differences were found in Senior International and National level gymnasts and Junior International and National level gymnasts in relation to Involvement Opportunity (Sports Commitment).

35. Significant differences were found in Senior International and National level gymnasts in relation to Locus of Control whereas the observed sequence was found that National > State > International in Senior Group and International > State > National level gymnasts in Junior Group.

36. Insignificant differences were found in Senior International and State level gymnasts, National and State level gymnasts and Junior International and National level gymnasts, International and State level gymnasts and National and State level gymnasts in relation to Locus of Control.
SECTION –THREE

1. It was concluded that Mood Profile (Tension) was significantly related to the speed and grip strength (Right and Left Hand) of Senior International level gymnasts.

2. Mood Profile (Anger, Confusion, Depression, Fatigue and Vigour) was insignificantly related to the Physical variables of Senior International level gymnasts.

3. Mood Profile (Anger) was significantly related to the Explosive leg strength (Standing Broad Jump and Vertical Jump) of Junior International level gymnasts.

4. Mood Profile (Confusion, Depression, Fatigue, Tension and Vigour) was insignificantly related to the Physical variables of Junior International level gymnasts.

5. Mood Profile (Anger, Confusion and Vigour) was significantly related to the Agility and Explosive leg strength (Standing Broad Jump) of Senior National level gymnasts.

6. Mood Profile (Depression, Fatigue and Tension) was insignificantly related to the Physical variables of Senior National level gymnasts.

7. Mood Profile (Anger, Fatigue and Tension) is significantly related to the Speed, Flexibility, Explosive leg strength (Standing Broad Jump and Vertical Jump) of Junior National level gymnasts.

8. Mood Profile (Depression and Vigour) was insignificantly related to the Physical variables of Junior National level gymnasts.

9. Mood Profile (Anger and Fatigue) was significantly related to the Flexibility and Grip Strength (left hand) of Senior State level gymnasts.

10. Mood Profile (Confusion, Depression Tension and Vigour) were insignificantly related to the Physical variables of Senior State level gymnasts.

11. Mood Profile (Depression, Fatigue and Tension) is significantly related to the Flexibility, Explosive leg strength (Standing Broad Jump) and Grip Strength (Left Hand) of Junior State level gymnasts.

12. Mood Profile (Anger, Confusion and Vigour) was insignificantly related to the Physical variables of Junior State level gymnasts.
13. Sports Commitment, Personal Investment and Social Constraint is significantly related to the Speed, Flexibility, Agility, Explosive leg strength (Vertical Jump) and Grip Strength (Right and Left Hand) of Senior International level gymnasts.

14. Sports Commitment, Sports Enjoyment, Involvement Alternatives and Involvement Opportunity were insignificantly related to the physical variables of Senior International level gymnasts.

15. Sports Commitment, Sports Enjoyment, Personal Investment and Involvement Opportunity is significantly related to the Speed, Flexibility, Explosive leg strength (Standing Broad Jump) of Junior International level gymnasts.

16. It was also concluded that Involvement Alternatives and Social Constraint was insignificantly related to the physical variables of Junior International level gymnasts.

17. Sports Commitment, Personal Investment and Involvement Opportunity is significantly related to the Speed and Grip strength (Right Hand) of Senior National level gymnasts.

18. It was also found that Sports Enjoyment, Involvement Alternatives and Social Constraint were insignificantly related to the physical variables of Senior National level gymnasts.

19. Sports Commitment, Personal Investment and Involvement Opportunity is significantly related to the Speed, Explosive leg strength (Standing Broad Jump) and Grip strength (Right and Left Hand) of Junior National level gymnasts.

20. It was also concluded that Sports Enjoyment, Involvement Alternatives and Social Constraint was insignificantly related to the physical variables of Junior State level gymnasts.

21. It was concluded that Locus of Control was insignificantly related to the physical variables of Senior International and Senior State level gymnasts.

22. Locus of Control was also significantly related to the Speed of Senior National level gymnasts.
23. Locus of Control was insignificantly related to the Agility, Explosive leg strength (Standing Broad Jump and Vertical Jump) and Grip Strength (Right and Left Hand) of Senior National level gymnasts.

24. Locus of Control is significantly related to the Explosive leg strength (Standing Broad Jump) of Junior International level gymnasts.

25. Locus of Control is significantly related to the Grip strength (Right and Left Hand) of Junior National level gymnasts.

26. It was also concluded that Locus of Control was insignificantly related to the Speed, Agility, Flexibility, Explosive leg strength (Vertical Jump), Grip strength (Right and Left Hand) of Junior International level gymnasts.

27. It was also concluded that Locus of Control was insignificantly related to the Speed, Agility, Flexibility, Explosive leg strength (Vertical Jump) of Junior National level gymnasts.

28. It was also concluded that Locus of Control was insignificantly related to the physical variables of Junior State level gymnasts.

**RECOMMENDATIONS**

1. It is recommended that the similar type of the study can be undertaken for other physical variables.

2. It is recommended that the similar type of the study can be undertaken for the various other psychological variables.

3. It is further recommended that the study can be taken on the players of other games with different types of variables using most advanced statistical techniques for getting more accurate results.

4. The similar type of study can be conducted on female gymnasts.

5. It is further recommended that based on the physical and Psychological variables prediction study may be undertaken in Gymnastics and other games too.