Chapter-V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The purpose of the study was to determine the coordinative abilities and physiological characteristics of Badminton players of Delhi State at different age levels. Secondly, the other objective of the study was to compare the Delhi badminton players on basis of coordinative abilities and physiological abilities at different age levels. The present study was conducted on ninety Badminton players from Delhi State at different levels (Senior, Sub junior and Junior). Thirty subjects were selected from each level i.e. Sub Junior, Junior and Senior. The study was taken to pinpoint the coordinative abilities and physiological characteristics of Badminton players of Delhi state at different levels. Therefore, based on literary evidence and scholar's own understanding the following variables were selected for the purpose of this study: Coordinative abilities: Reaction Ability, Orientation Ability, Differentiation Ability, Balance Ability and Rhythmic Ability. Physiological variables: Anaerobic Power, Vital Capacity, Resting Heart Rate, Resting Respiratory Rate, Body
Composition, Total Body Fat Percentage, Lean Body Weight, Positive Breath Holding Capacity and Negative Breath Holding Capacity. The tests used in this Study for the collection of data were selected because they were found to be most reliable and have been used very often in the profession of physical education and sports throughout the world.

For anaerobic capacity - Sargent Jump- Lewis Nomogram was employed, and anaerobic power was expressed in Kg-m./sec. Vital capacity was measured by Dry Spirometer. The amount of expired air that was read directly from the calibrated scale was the score of vital capacity and was recorded in liters. Heart rate was measured in terms of number of pulse beats per minute. Resting respiratory rate was measured by manual method over a period of one minute. Fat percentage was measured by Slown Weir Nomogram Technique. In this technique two sites (Thigh and Subscapular) skin thickness was used. Lean Body weight was be calculated by subtracting the fat weight of the subjects from their total body weight. Positive breath holding was measured by manual method and the score was recorded in second. Negative breath holding was measured by manual method and the score was recorded in second. Weight was recorded nearest to half a kilogram.
The necessary data on co-ordinative abilities tests was used as suggested by Peter Hirtz. To measure the reaction ability Ball Reaction Exercise Test was used. The score was the distance measured in centimeters from the top of the planks to the point where the subjects stop the ball. Only two trials were given and the best one was recorded as the score. Orientation Ability of the Subjects was measured by Numbered Medicine Ball Run Test. The time taken to complete the course was noted in seconds. Two trials were given to each subject and the best one was recorded as the score. To assess the Differentiation Ability of the Subjects Backward Medicine Ball Throw Test was applied. The score was recorded as (Medicine ball touching the mat – 1 point, Medicine ball touching the circle line – 2 points, Medicine ball touching inside the circle – 3 points, Medicine ball touching the 2 kg. Medicine ball – 4 points). To determine the Balance ability of the subjects Long Nose Test was used. Only the time taken to complete the course was the score. At the same time, the subject who fails to complete the task without losing balance was not given any further trial and no score was awarded. To determine the Rhythm Ability of the subjects Sprint at the Given Rhythm Test was used. The difference between the timing of the first and second attempts was taken as the score.
Conclusion

Within the limitations of the present study, the following conclusions may be drawn.

The observed mean and standard deviation of Anacrobic Power (Kgm/sec) Senior 74.13 ± 6.08 Junior 73.50 ± 6.95 Sub Junior 72.43 ± 5.25 Total 73.35 ± 6.11, Vital Capacity (liters) Senior 3.80 ± .29 Junior 3.78 ± .24 Sub Junior 3.53±.24 Total 3.70 ± .28 Resting Heart Rate (No. of Pulse per minute) Senior 62.00 ± 5.40 Junior 64.03 ± 5.02 Sub -Junior 65.06 ± 4.34 Total 63.70 ± 5.05 Resting respiratory rate (No. of breaths per minute) Senior 16.46 ± 2.72 Junior 16.86 ± 2.68 Sub Junior 18.83 ± 2.08 Total 17.38 ± 2.69 Fat Percentage (%)Senior 12.89 ± 3.69 Junior 12.00 ± 3.45 Sub Junior 11.77 ± 3.64 Total 12.22 ± 3.590 Lean Body Weight (Kg)Senior 60.50 ± 6.54 Junior 60.76 ± 5.79 Sub - junior 61.16 ± 5.26 Total 60.81 ± 5.83 Positive Breath Holding capacity (sec) Senior 101.7 6 ± 15.58 Junior 94.93 ± 14.60 Sub Junior 93.96 ± 12.70 Total 96.88 ± 14.60 Negative Breath Holding Capacity (sec) Senior 73.10 ± 7.78 Junior 72.70 ± 8.56 Sub Junior 70.40 ± 7.15 Total 72.06 ± 7.85
Thus it was concluded that the senior players possess better Anaerobic Power, Vital Capacity, Resting Heart Rate, Respiratory rate, Positive Breath Holding capacity and Negative Breath Holding Capacity than the Junior and Sub Junior. Moreover, all the players at different levels possess more or less similar Body Fat Percentage.

The observed mean and standard deviation of Reaction ability (Cm) Senior 92.50 ± 6.03 Junior 88.96 ± 7.14 Sub junior 92.20 ± 6.93 Total 91.22 ± 6.83 Orientation ability (Sec) Senior 8.49 ± .25 Junior 10.69 ± 13.09 Sub junior 8.316 ± .24 Total 9.16 ± 7.55 Differentiation ability (Max. point scored) Senior 9.86 ± 2.31 Junior 0.60 ± 2.97 Sub junior 7.50 ± 1.71 Total 9.32 ± 2.71 Balance ability (sec.) Senior 9.54 ± .23 Junior 9.58 ± .27 Sub Junior 9.48 .26 Total 9.53 ± .25 Rhythmic ability (Sec.)Senior 1.43 ± .19 Junior 1.59 ± .19 Sub Junior 1.52 ± .17 Total 1.51 ± .19

Thus it was concluded that the senior players were better in case of Reaction Ability, Orientation Ability and Rhythmic ability where in case of Differentiation Ability Junior players were better and in Balance Ability sub junior players has shown their excellence.
Significant difference was found in case of vital capacity, resting respiratory rate, differentiation ability and rhythmic ability whereas no significant difference was found in case of Anaerobic Power, Resting Heart Rate, Total Body Fat Percentage, Lean Body Weight, Positive Breath Holding Capacity, Negative Breath Holding Capacity, Reaction Ability, Orientation Ability and Balance Ability among different levels (Senior, Junior and Sub Junior) of Badminton players of Delhi State.

**Recommendations**

In light of conclusions drawn, the following recommendations were made:

1. Emphasis can be given to studies on biochemical aspects of training- both long-term and short-term. By monitoring these parameters it would be possible to codify the practical schedule and nutritional requirements of specialized athletes for optimum performance under Indian conditions.

2. Studies can be conducted on national level badminton players receiving specialized exercise training so that future training is supported by scientific data for excellence in specific fields.
3. Studies on fatigue resulting from different types of exercises can be carried out and its metabolic basis worked out. Such studies would be of great applied value in enhancing players' performance and would safeguard their health.

4. India is a vast country both from the geographical as well as the genetic lineage point of view. Therefore, to exploit the potential of the masses, sport research should be conducted in different climatic regions and on populations of different genetic origins.

5. Same study may be repeated by employing a large sample of students.

6. Similar study may be conducted by selecting Psychological and motor variables.

7. Same type of study may be done in other areas such as sociology and physical fitness.