

Comparative Analysis of Selected Anthropometry Physical and Physiological Variables among University Men Ball Badminton, Badminton and Tennis Players

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Abstract: To compare the anthropometric, physical and physiological variables among University men Ball Badminton, Badminton and Tennis players

In this chapter, selection of subjects, selection of variables, selection of test, tester's reliability, instrument reliability, objectivity, validity, orientation of the subjects, test administration, collection of data and statistical analysis have been explained.

Collected data were analyzed with one way analysis variance (ANOVA). If obtained 'F' ration is significant Schaffer's post hoc was used .The Level of significant was fixed at 0.05.

On the basis of the results obtained by statistically analyzing the data selected anthropometric, physical and physiological variables such as height, weight and speed, agility and flexibility and vital capacity, breath holding time of university men Ball Badminton, Badminton and Tennis players. The conclusions were drawn.

- There was a significant difference between anthropometric variables of university men Ball Badminton, Badminton and Tennis players.
- There was a significant difference between physical variables of university men Ball Badminton, Badminton and Tennis players.
- There was a significant difference between physiological variables of university men Ball Badminton, Badminton and Tennis players.

Keywords: Anthropometric, Badminton, Stadio Meter and Weighing Machine.

1. INTRODUCTION

The primitive man may be the very nature of his daily activities, build a strong physique superior to the civilized man in modern civilize machinery world, the change for the physical activities are less because of the invention of computer and so many other devices the participation in the physical activity is to maintained a good health.

The world health organization has defined health as a state of complete physical mental as social well being. Physical education field serves a lot for an individual to be healthy person.

According to **Robson Moses (1985)**, physical education necessarily indicates the program of sports and games in educational institution as a curricular, co-curricular and extracurricular activity.

Many live for happiness gives him enjoyment and satisfaction, which depends on his physical and mental ability. The game and dances and other physical and mental ability the game and other physical education activity require different level of fitness that means in varied proportions. Participation in various games develops various physical fitness components such as speed, strength, agility, endurance etc.

The main aim of education is the total and harmonious development of human beings, which includes the development of body mind and spirit. There is no doubt that education plays the most significant role in the resulting of success of failure.

Physical education is the integral part of total education. The wealth of the nation depends upon the health of the people good personality can developed through participation in games and sports.

Sport is an institutionalized competitive activity that involves vigorous physical exertion (or) the use of relatively complex physical skills by individual whose participation is motivated by a combination of intrinsic and extrinsic factors (**Jay 1978**).

Physical education and sports as a subject is widely interpreted and applied. For some educators the primary purpose of physical education is to help children develop good motor skill patterns and to acquire sports skills which serve as a basis of active leisure time activities. For other, the primary purpose is to promote good health and well being of physical fitness. Many educators see the greatest contribution of organized physical education as a laboratory for development in the area of social and emotional growth (**Evelin 1967**).

Badminton and tennis players should possess the qualities such as agility, speed, flexibility and explosive power for better performance in addition to the basic components such as flexibility, coordination, strength endurance. The term fitness implies relation between the task to be performed and the individual capabilities to perform it (**Lawrance 1976**).

2. STATEMENT OF THE PROBLEM

The purpose of the study was to compare the anthropometric, physical and physiological variables among University men Ball Badminton, Badminton and Tennisplayers.

Hypothesis

It would be hypothesized that Ball Badminton , Badminton and Tennis players may differ from each other on the selected physical fitness variables.

Limitations & Delimitations

Limitations:

1. Heredity factors that might have influenced the results of the study could not controlled
2. Changes in the climatic conditions and temperature during the testing periods could not be controlled.
3. The internal and external factors, which may discourage or motivate the subjects, could not be controlled.

Delimitations:

The study was delimited on the following aspects:

1. The study was confined to total (N=30) University men players Ball Badminton, Badminton and Tennis players from (n=10) each group, from, Department Physical Education and Sports Sciences. Annamalai University, Tamil Nadu.
2. The subjects' age ranged between 18 to 24 years.
3. The following anthropometric variables were selected as dependent variables Height and Weight

3. SIGNIFICANCE OF THE STUDY

This study can be considered significant because of the following benefits.

Anthropometric, physical and physiological variables are Para amount importance in all human endeavors. Performance at high level will be affected if optimum physical fitness is not maintained. The study has the following specific significant contributions.

1. The study could be helpful to athletes, coaches and physical education coaches to measure the optimal physical fitness.
2. The result of study will be enlighten how the anthropometric, physical and physiological variables can influence on performance among college men Ball Badminton, Badminton and Tennis players.
3. The findings of this study may help the coaches in the developing training schedules for different age group and gender.

4. REVIEW OF RELATED LITERATURE

Linda (1978), conducted a comparative study on the physical fitness components of girls Kabaddi and Basketball players in Kanyakumari district, his research suggested the Kabaddi players were better in endurance and Basketball players in sergeant jump. The other components such as agility, arm length are almost same.

Meera (1982), conducted a study to compare the selected general motor ability compare the selected general motor ability components i.e speed, agility, flexibility, muscular endurance, balance, leg strength, arm and shoulder strength and co-ordination of women basketball and volleyball players. The subject chosen were women basketball and volleyball players of lakshmbai national college of physical education, Gwalior, fifteen players in each game were selected and the components were tested on the players. The data collected in all the tests were statistically compared by using 't' ratio at 0.5 level of significance. The result shows that the women basketball players were comparatively superior to volley ball players in arm and shoulder strength. But there were no significant differences between the two groups in speed, agility, trunk flexion, abdominal endurance, balance, leg strength and hand – eye coordination.

Chandrasekar(1983), proposed to compare the selected physical fitness components i.e speed, extent flexibility, leg explosive strength, gross body co- ordination and cardio respiratory endurance of football and basketball players, on the basic of analysis of data, the basketball players were comparatively superior to football players were found to possess high leg explosive strength and gross body co-ordination.

Kroll (1954), compared the vital capacity of thirty five varsity wrestlers with that of thirty five normal students. The mean and standard deviation and range were compared and it was found that the mean measure of vital capacity of varsity wrestler was 313.29 cc/ litres average.

5. METHODOLOGY

In this chapter, selection of subjects, selection of variables, selection of test, tester's reliability, instrument reliability, objectivity, validity, orientation of the subjects, test administration, collection of data and statistical analysis have been explained.

Selection of Subjects

To achieve the purpose of the study thirty (N=30) university menBall Badminton, Badminton and Tennis players (from each game ten(n=10) from Department physical education, Annamalai University, Chidambaram, Tamil Nadu were selected all by purposive sampling method . Their age ranged from 18 to 24 years.

6. ANALYSIS OF THE DATA AND RESULTS OF THE STUDY

Analysis of the Data

Collected data were analyzed with one way analysis variance (ANOVA). If obtained 'F' ration is significant scheffe's post hoc was used .The Level of significant was fixed at 0.05.

Results of the Study:

Height:

The analysis of variance on height Among Men University Ball Badminton, Badminton and Tennis players were analysis are presented in the table - III

Table-Iii Analysis Of Variance on Height Among Men University Ball Badminton, Badminton And Tennis Players

| Group | Mean | S.D | Source of Variance | Sum of Squares | df | Mean Square | ' F' |
|----------------|-------|------|--------------------|----------------|----|-------------|------|
| Ball Badminton | 165.3 | 5.83 | Between | 18.867 | 2 | 9.433 | 0.38 |
| Badminton | 165.9 | 2.92 | Within | 654.60 | 27 | 24.244 | |
| Tennis | 167.2 | 5.49 | | | | | |

No Significant

Level of significant fixed at 0.05 level. Table value 3.35 with df 2&27

Table – III shows that height mean values and standard deviation of Ball Badminton, Badminton and Tennis players were 165.3 ± 5.83 and 165.9 ± 2.92 and 167.2 ± 5.49 respectively. The obtained 'F' value 0.38 which was as less than tabulated value in the level 0.05. So that researcher's hypothesis rejected and null hypothesis accepted.

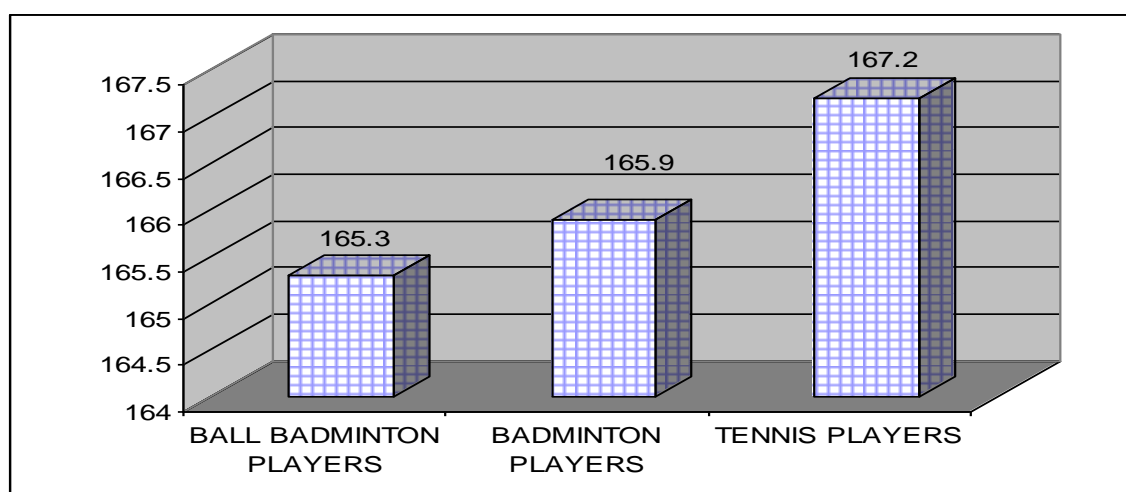


Figure 1: The Bar Diagram Shows That Height in (Centimeter) Of Ball Badminton, Badminton and Tennis Players

Figure:-1 clearly indicates that Tennis players have better height followed by Badminton and Ball Badminton players.

WEIGHT:

The analysis of variance on weight among Men University Ball Badminton, Badminton and Tennis players were analysis are presented in the table - IV

Table-Iv: Analysis Of Variance On Weight Among Men University Ball Badminton, Badminton And Tennis Players

| Group | Mean | S.D | Source of Variance | Sum of Squares | Df | Mean Square | ' F' |
|----------------|------|-----|--------------------|----------------|----|-------------|------|
| Ball Badminton | 57.7 | 6.6 | Between | 96.267 | 2 | 48.133 | 0.87 |
| Badminton | 59.7 | 7.3 | Within | 1479.10 | 27 | 54.781 | |
| Tennis | 53.9 | 8.7 | | | | | |

No Significant

Level of significant fixed at 0.05 level. Table value 3.35 with df 2&27

Table – IV shows that weight mean values and standard deviation of Ball Badminton, Badminton and Tennis players were 57.7 ± 6.6 and 59.7 ± 7.3 and 53.9 ± 8.7 respectively. The obtained 'F' value 0.87 which was as less than tabulated value in the level 0.05. So that researcher's hypothesis rejected and null hypothesis accepted.

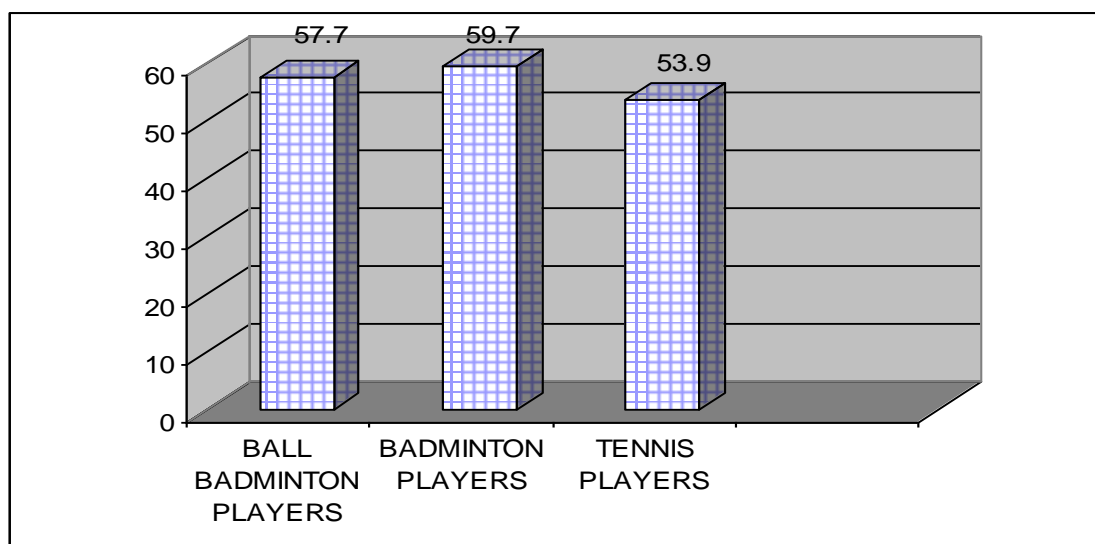


Figure – 2: The Bar Diagram Shows That Weight in (Kilogram) Of Ball Badminton, Badminton and Tennis Players

Figure:-2 clearly indicate that Badminton players have more weight followed by Ball Badminton and Tennis players.

SPEED:

The analysis of variance on speed among Men University, Ball Badminton, Badminton and Tennis players were analysis are presented in the table – V

Table-V: Analysis Of Variance on Speed Among Men University Ball Badminton, Badminton And Tennis Players

| Group | Mean | S.D | Source of Variance | Sum of Squares | df | Mean Square | ‘ F’ |
|----------------|------|------|--------------------|----------------|----|-------------|--------|
| Ball Badminton | 8.40 | 0.30 | Between | 2.371 | 2 | 1.185 | 21.86* |
| Badminton | 7.90 | 0.19 | | | | | |
| Tennis | 7.80 | 0.18 | Within | 1.464 | 27 | 0.054 | |

* Significant

Level of significant fixed at 0.05 level. Table value 3.35 with df 2&27

Table – V shows that speed mean values and standard deviation of Ball Badminton, Badminton and Tennis players were 8.40 ± 0.30 and 7.90 ± 0.19 and 7.80 ± 0.18 respectively. The obtained ‘F’ value 21.86 which were greater than tabulated value in the level 0.05. So that researcher’s hypothesis accepted and null hypothesis rejected.

Table –VI: Schiff’s Post Hoc Test Difference between the Paired Means on Speed

| Ball Badminton | Badminton | Tennis | Mean difference | C.I |
|----------------|-----------|--------|-----------------|------|
| 8.40 | 7.90 | | 0.50* | 0.13 |
| 8.40 | | 7.80 | 0.60* | |
| | 7.90 | 7.80 | 0.10 | |

*Significant

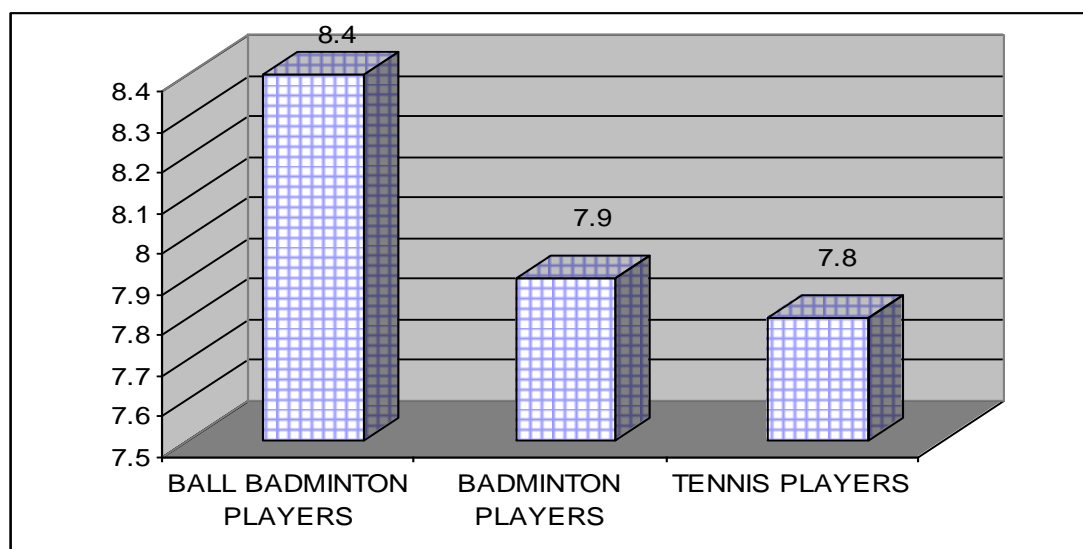


Figure 3: The Bar Diagram Shows That Speed in (Seconds) Of Ball Badminton, Badminton and Tennis Players

Figure:- 3 clearly indicates that Tennis players have better speed quality followed by Badminton and Ball Badminton players.

AGILITY:

The analysis of variance on agility among men university Ball Badminton, Badminton and Tennis players were analysis are presented in the table – VII

Table-Vii: Analysis Of Variance on Agility among Men University Ball Badminton, Badminton and Tennis Players

| Group | Mean | S.D | Source of Variance | Sum of Squares | Df | Mean Square | ' F' |
|----------------|-------|------|--------------------|----------------|----|-------------|--------|
| Ball Badminton | 12.01 | 0.54 | Between | 10.417 | 2 | 5.208 | 20.99* |
| Badminton | 10.76 | 0.39 | | | | | |
| Tennis | 11.0 | 0.76 | Within | 6.697 | 27 | 0.248 | |

* Significant

Level of significant fixed at 0.05 level. Table value 3.35 with df 2&27

Table – VII shows that agility mean values and standard deviation of Ball Badminton, Badminton and Tennis players were 12.01 ± 0.54 and 10.76 ± 0.39 and 11.0 ± 0.76 respectively. The obtained 'F' value 20.99 which were greater than tabulated value in the level 0.05. So that researcher's hypothesis accepted and null hypothesis rejected.

Table –Viii: Scheffe's Post Hoc Test Difference between the Paired Means on Agility

| Ball Badminton | Badminton | Tennis | Mean difference | C.I |
|----------------|-----------|--------|-----------------|------|
| 12.01 | 10.76 | | 1.25* | 0.18 |
| 12.01 | | 11.0 | 1.01* | |
| | 10.76 | 11.0 | 0.24* | |

*Significant

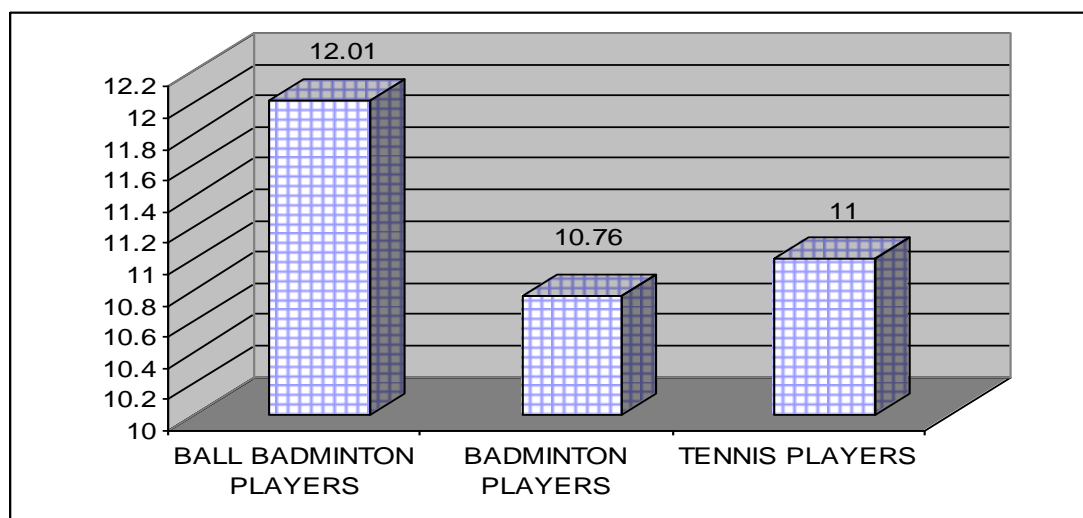


Figure 4: The Bar Diagram Shows That Agility in (Seconds) Of Ball Badminton, Badminton and Tennis Players

Figure:- 4 clearly indicates that Badminton players have better agility quality followed by Tennis and Ball Badminton players.

FLEXIBILITY:

The analysis of variance on flexibility among Men University Ball Badminton, Badminton and Tennis players were analysis are presented in the table - IX

Table-Ix: Analysis Of Variance on Flexibility among Men University Ball Badminton, Badminton and Tennis Players

| Group | Mean | S.D | Source of Variance | Sum of Squares | Df | Mean Square | ' F' |
|----------------|-------|------|--------------------|----------------|----|-------------|--------|
| Ball Badminton | 16.80 | 0.85 | Between | 123.566 | 2 | 61.783 | 75.13* |
| Badminton | 21.00 | 0.74 | | | | | |
| Tennis | 21.10 | 1.08 | Within | 22.202 | 27 | 0.822 | |

* Significant

Level of significant fixed at 0.05 level. Table value 3.35 with df 2&27

Table – IX shows that flexibility of mean values and standard deviation of Ball Badminton, Badminton and Tennis players were 16.80 ± 0.85 and 21.00 ± 0.74 and 21.10 ± 1.08 respectively. The obtained 'F' value 75.13 which were greater than tabulated value in the level 0.05. So that researcher's hypothesis accepted and null hypothesis rejected.

Table –X: Scheffe's Post Hoc Test Difference between the Paired Means on Flexibility

| Ball Badminton | Badminton | Tennis | Mean difference | C.I |
|----------------|-----------|--------|-----------------|------|
| 16.80 | 21.00 | | 4.20* | 0.15 |
| 16.80 | | 21.10 | 4.30* | |
| | 21.00 | 21.10 | 0.10 | |

*Significant

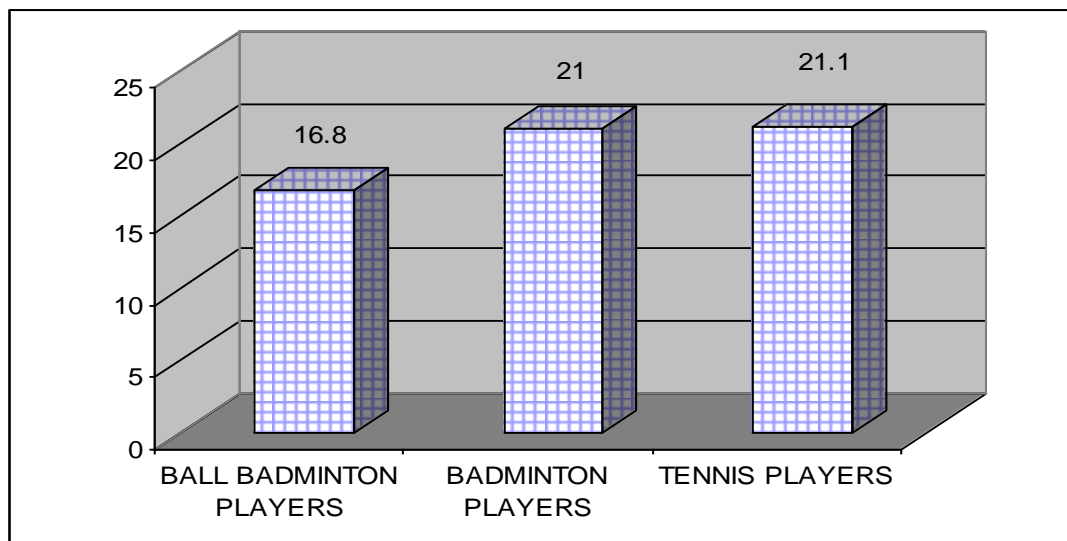


Figure 5: The Bar Diagram Shows That Flexibility in (Centimeters) Of Ball Badminton, Badminton and Tennis Players

Figure - 5 clearly indicate that Badminton players have better flexibility followed by Tennis and Ball Badminton players.

VITAL CAPACITY:

The analysis of variance on vital capacity among Men University Ball Badminton, Badminton and Tennis players were analysis are presented in the table – XI

Table-Xi: Analysis Of Variance on Vital Capacity Among University Ball Badminton, Badminton And Tennis Players

| Group | Mean | S.D | Source of Variance | Sum of Squares | Df | Mean Square | ‘ F’ |
|----------------|-------|------|--------------------|----------------|----|-------------|--------|
| Ball Badminton | 169.8 | 6.61 | Between | 1505.267 | 2 | 752.633 | 26.25* |
| Badminton | 172.8 | 4.41 | | | | | |
| Tennis | 186.1 | 4.77 | Within | 774.100 | 27 | 28.67 | |

* Significant

Level of significant fixed at 0.05 level. Table value 3.35 with df 2&27

Table – XI shows that vital capacity of mean values and standard deviation of Ball Badminton, Badminton and Tennis players were 169.8 ± 6.61 and 172.8 ± 4.41 and 186.1 ± 4.77 respectively. The obtained ‘F’ value 26.25 which were greater than tabulated value in the level 0.05. So that researcher’s hypothesis accepted and null hypothesis rejected.

Table –Xii: Scheffe’s Post Hoc Test Difference between the Paired Means On Vital Capacity

| Ball Badminton | Badminton | Tennis | Mean difference | C.I |
|----------------|-----------|--------|-----------------|------|
| 169.8 | 172.8 | | 3.0* | 5.70 |
| 169.8 | | 186.1 | 16.3* | |
| | 172.8 | 186.1 | 13.3* | |

*Significant

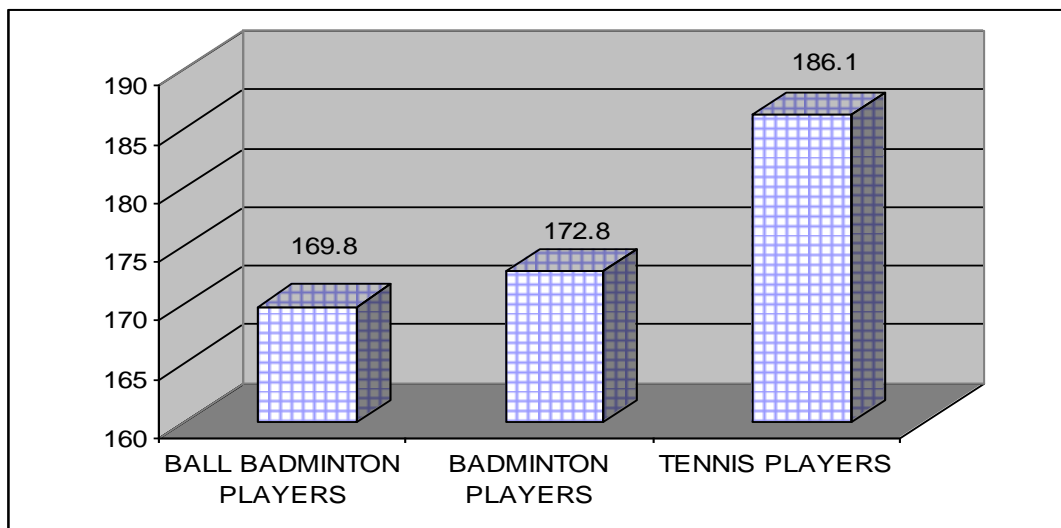


Figure 6: The Bar Diagram Shows That Vital Capacity (Cubic Cm) Of Ball Badminton, Badminton And Tennis Players

Figure:- 6 clearly indicates that Tennis players have better vital capacity quality followed by Badminton and Ball Badminton players.\

BREATH HOLDING TIME:

The analysis of variance on breath holding time among men University Ball Badminton, Badminton and Tennis players were analysis are presented in the table– XIII.

Table-Xiii: Analysis Of Variance on Breath Holding Time Among Men University Ball Badminton, Badminton And Tennis Players

| Group | Mean | S.D | Source of Variance | Sum of Squares | Df | Mean Square | ‘ F’ |
|----------------|------|------|--------------------|----------------|----|-------------|-------|
| Ball Badminton | 33.9 | 3.38 | Between | 273.267 | 2 | 136.633 | 5.68* |
| Badminton | 40.4 | 4.37 | | | | | |
| Tennis | 40.2 | 6.44 | Within | 648.90 | 27 | 24.033 | |

* Significant

Level of significant fixed at 0.05 level. Table value 3.35 with df 2&27

Table – XIII shows that breath holding time of mean values and standard deviation of Ball Badminton, Badminton and Tennis players were 33.9 ± 3.38 and 40.4 ± 4.37 and 40.2 ± 6.44 respectively. The obtained ‘F’ value 5.68 which were greater than tabulated value in the level 0.05. So that researcher’s hypothesis accepted and null hypothesis rejected.

Table –Xiv: Scheffe’s Post Hoc Test Difference between The Paired Means On Breath Holding Time

| Ball Badminton | Badminton | Tennis | Mean difference | C.I |
|----------------|-----------|--------|-----------------|------|
| 33.9 | 40.4 | | 6.5* | 1.20 |
| 33.9 | | 40.2 | 6.7* | |
| | 40.4 | 40.2 | 0.2 | |

*Significant

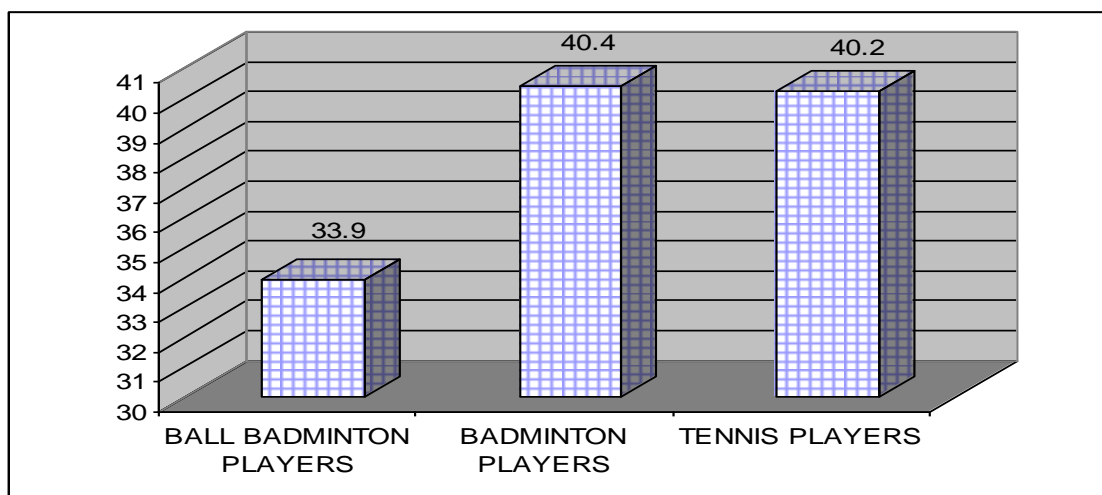


Figure 7: The Bar Diagram Shows That Breath Holding Time (Seconds) Of Ball Badminton, Badminton and Tennis Players

Figure 7 clearly indicates that Badminton players have better breath holding time followed by Tennis and Ball Badminton players.

7. DISCUSSION

Discussion on Findings

The purpose of the study was comparing the selected anthropometric variables (height, weight), physical variables (speed, agility and flexibility), physiological variables (vital capacity, breath holding time) compare among university men Ball Badminton, Badminton and Tennis players.

Height Tennis players have height comparing than Badminton and Ball Badminton players.

Weight Badminton players have more weight comparing than Ball Badminton and Tennis players.

Speed Tennis players better speed quality comparing than Badminton and Ball Badminton players.

Agility Badminton players better agility comparing than Tennis and Ball Badminton players.

Flexibility Tennis players better flexibility comparing than Badminton and Ball Badminton players.

Vital Capacity Tennis players have higher vital capacity comparing than Badminton and Ball Badminton players.

Breath Holding Time Badminton players have higher breath holding timings comparing than and Tennis and Ball Badminton players.

Discussion On Hypothesis

At earlier, the researcher had formulated the following hypothesis that the selected anthropometric, physical and physiological variables men university Ball Badminton, Badminton and Tennis players would have significant difference among the players. Hence the researcher's hypothesis accepted. Null hypothesis rejected.

8. SUMMARY CONCLUSION AND RECOMMENDATIONS SUMMARY

The purpose of the study was found out the selected anthropometric variables (height, weight), physical variables (speed, agility and flexibility), physiological variables (vital capacity, breath holding time) compare among university men Ball Badminton, Badminton and Tennis players. To achieve this purpose total (N=30) Ball Badminton, Badminton and Tennis players from each (n= 10) players from Department Physical Education, Annamalai University selected by purposive sampling method. Their age ranged between 18 to 24 years.

Among the groups was selected as dependent variables are height and weight measured with stadiometer and weighing machine and physical variables speed measured with 50 m, agility measured with shuttle run and flexibility measured with sit and reach test and physiological variables vital capacity measured with computerized Spirometer and breath holding time measured with how long individual can hold breath with help of stop watch.

Collected data were analyzed with one way analysis variance (ANOVA). If obtained 'F' ration is significant Schaffer's post hoc was used .The Level of significant was fixed at 0.05.

9. RECOMMENDATIONS

From the results of the study the following suggestions are suggested by the researcher, the following recommendations are

- ❖ A study may be conducted evaluate the university teams on their physical fitness, psychological, bio chemical variables.
- ❖ Similar studies may be conducted on college, team and school teams for evaluation.
- ❖ Similar studies may conduct on women team or school, college, university levels.

10. CONCLUSIONS

On the basis of the results obtained by statistically analyzing the data selected anthropometric, physical and physiological variables such as height, weight and speed, agility and flexibility and vital capacity, breath holding time of university men Ball Badminton, Badminton and Tennis players. The conclusions were drawn.

- There was a significant difference between anthropometric variables of university men Ball Badminton, Badminton and Tennis players.
- There was a significant difference between physical variables of university men Ball Badminton, Badminton and Tennis players.
- There was a significant difference between physiological variables of university men Ball Badminton, Badminton and Tennis players.

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