



## A Comparative Study of Somatotypes Between Badminton and Table Tennis Players

### KEYWORDS

Anthropometry Endomorphy, Mesomorphy, Ectomorphy, Badminton and Table Tennis

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### ABSTRACT

The identification of physical characteristics in a sport modality contributes to its success and enables to spot differences among athletes of different modalities, which is of great interest for both sport coaches and scientists. The Badminton and Table Tennis are the racquet sports which are played between two opposing players or two opposing pairs the size, shape and form of the players are known to play a significant role in Badminton and Table Tennis. The purpose of this study was to compare the somatotype profile of Badminton and Table Tennis players. Total of 90 male players from badminton N=50, Table Tennis N=40 subjects were selected from of different colleges affiliated to Karnataka University, Dharwad St: Karnataka, the ages of athletes were between 20 to 25 years. The z-test was used for comparing the mean Somatotypes of Badminton and Table Tennis players. Statistical analysis revealed significant differences in the mean meso and ectomorphic profiles and insignificant difference in the mean endomorphic profile of Badminton and Table Tennis players.

### INTRODUCTION

Specific anthropometric characteristics are needed to be successful in certain sporting events. It is also important to note that there are some differences in body structure and composition of sports persons involved in individual and team sports. The identification of physical characteristics in a sport modality contributes to its success and enables to spot differences among athletes of different modalities, which is of great interest for both sport coaches and scientists. Sports performance is based in a complex and intricate diversity of variables, which include physical (general and specific conditions), psychological (personality and motivation) and body (body morphology, anthropometry and body composition) factors. Badminton is a sports branch which can be played easily by all people from several ages, which does not drives the player to violence, which also can be used for a recreation and fitness purposes (R. C. Memedov and R. Kale, 1994). On the other hand Table Tennis is not only a sports branch which is so popular but also has new point of views. On one hand it is a kind of sport which is a popular spare time activity and many people can exercise and this sport also became a remarkable revenue source provider (P. Unierzyski, 1995). At high levels of play, the sport demands excellent fitness: players require aerobic stamina, agility, strength, speed and precision. It is also a technical sport, requiring good motor coordination, the development of sophisticated racquet movements and adequate anthropometrical requirement and biomechanical development. According to Groppe and Roetert (1992) and Lei et al. (1993), the physical requirements of racquet sports demand efficiency in a number of fitness components.

To be able to execute advanced strokes or compete effectively against progressively stronger opponents, a player would need to develop higher levels of the basic physical qualities, such as strength, power, muscular endurance, flexibility, coordination and agility Thus we see that size, shape and form of the players are known to play a significant role in the performance of Badminton and Table Tennis players. Fundamental Skills of Badminton and Table Tennis like servicing, lifts and smashing, requires a specific type of physique having specific proportions with certain conditional abilities. The Purpose of this study was to assess and compare the somatotype of Badminton and Table Tennis players.

### METHODOLOGY

#### Selection of subjects:

For the purpose of this study, Total of 90 male players from badminton N=50, Table Table Tennis N=40 subjects were selected from of different colleges affiliated to karnataka university, dharwad st: karnataka, the ages of players were between 20 to 25 years.

The weight of subjects was measured by using Digital Weighing machine to the nearest 0.5 kg. The height of the subjects was measured with stadiometer to the nearest 0.5 cm. Skinfold measurement by means of Lange Skinfold caliper with proper anatomical mark sites of Triceps, Subscapular, supraspinale, and medial calf. Breadth measurement by means of harpendan caliper at Humorous and Femur breadth. Girth measurement by means of Gulick Tape Arm Girth and Calf girth. The somatotype was determined from the following equations (Heath and Carter, 1990).

#### Endomorphy

$$0.1451 \times -0.00068 \times x^2 + 0.0000014 \times x^3 - 0.7182$$

Where,

x = The sum of triceps, subscapular and supraspinale skin folds.

#### Mesomorphy

$$0.858(A) + 0.601(B) + 0.188(C) + 0.161(C) - 0.131(E) + 4.5.$$

Where,

A = Humerus breadth (cm)

B= Femur breadth (cm)

C = Corrected arm girth [Arm-girth (cm)-(Triceps SF (mm)/10)]

D = Corrected calf girth [Calf girth (cm) - medial calf SF (mm) /10]

E = height (cm)

**Ectomorphy** = (Height (cms) x Weight (kgs) - 0.333)

**STATISTICAL ANALYSES:**

Values are presented as mean values and SD. Independent samples z - tests were used to test if population means estimated by two independent samples differed significantly. Data was analyzed using Statistical Package for the Social Sciences, version 16.0, SSPS Inc, Chicago, IL, USA).

**TABLE – 1. ENDOMORPHY**

Table shows insignificant obtained Z value for one tail test, which leads us to conclude that the mean Endomorphy of Badminton player was insignificantly greater than the mean endomorphy of Table Tennis players.

	Mean	Sd	Z value
Badminton	2.44	1.067	0.1411*
Table tennis	2.88	0.988	

**TABLE – 2. MESOMORPHY**

The mean mesomorphy of table tennis players > than mean mesomorphy of badminton players by 26.21% greater than the mean mesomorphy of Badminton players.

	Mean	Sd	Z value
Badminton	3.29	1.18	4.92
Table tennis	4.43	1.22	

**TABLE – 3. ECTOMORPHY**

Table shows significant obtained Z value for one tail test, which leads us to conclude that the mean Ectomorphy of Badminton player was significantly 26.7% greater than the mean Ectomorphy of Table Tennis players.

	Mean	Sd	Z value
Badminton	3.28	1.29	2.41
Table tennis	2.51	1.39	

**DISCUSSION OF FINDINGS:**

The Statistical technique reveals insignificant difference in the mean edomorphy of badminton and Table Tennis players. Whereas mean mesomorphy of Table Tennis players was significantly greater than the mean mesomorphy of Badminton players by 27.26%. However mean Ectomorphy of Badminton player was significantly (26.7% ) greater than the mean Ectomorphy of Table Tennis players. The somatotype measurement is an indication of the general build or configuration of an individual. The three components of the somatotype include the relative fatness (endomorph), the relative musculoskeletal robustness (mesomorphy) and the relative linearity (ectomorphy) of the individual, and the highest value gives an indication of the general shape of the individual (**Lieshout 2002**). The Table Tennis players in this study are highest in their mesomorphic components. The endomorphic values were found to be slightly similar, but ectomorphy of Table Tennis players is slightly lower than the badminton players. To gain an advantage in badminton the players should preferably have a tall, lean and muscular build. They would need to be high in their meso and ectomorphic components, and low in their endomorphic component. Both the Table Tennis and badminton players could be at a slight disadvantage due to the high endomorphic value.

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