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**Submission date:** 28-Jan-2025 09:24PM (UTC+0700)

**Submission ID:** 2573628172

**File name:** article\_ari.doc (82K)

**Word count:** 1901

**Character count:** 10898

## Physical and Anthropometric (Somatotype) Female Badminton Athletes Aged 10-12 Years

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6

### Abstract

The aim of this research was to determine the physical condition and somatotype of female badminton athletes aged 10-12 years in Semarang City. The population in this study were female athletes aged 10-12 years who had achieved achievements on the podium, totaling 10 athletes. The sampling technique is purposive sampling technique. The sample in this study consisted of 10 athletes. The instruments in this study used tests and measurements referring to physical tests aged 10-12 years (Wiyanto, 2020) and somatotype measurement using the Heath & Carter formula (Carter & Heath, 1990; Penggalih et al., 2018). The results of the physical tests for female badminton athletes aged 10-12 years were in the very good category 2 athletes (20%), in the Good category there were 6 athletes (60%) and in the Medium category there were 2 athletes (20%). The results of measuring the somatotype of female badminton athletes aged 10-12 years were in the Mesomorph category of 3 athletes (30%), in the Good category there were 7 athletes (60%) and in the Endomorph category there were none. In conclusion, female badminton athletes aged 10-12 in the city of Semarang have a good level of physical condition and are of the Ectomorph somatotype type which tends to have a tall body posture, little body fat and a small body shape.

**Keywords:** Profile, Tests and Measurements, Athlete Physique, Somatotype, Badminton

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4

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### INTRODUCTION

Badminton is a sport that is very popular in Indonesia, from children to adults, both men and women, with various motivations such as for recreation, maintaining fitness, or achieving achievements (Nugraha & Kusuma, 2021). In badminton, players use a racket as a bat and a shuttlecock as the object that is hit, and this game can be played both on closed and open courts (Ahmad et al., 2017). The badminton court has a rectangular shape bounded by lines and a net for Separate your own playing area from your opponent's. This game can be played individually, either one on one or two on two, and can be played by men, women, or mixed pairs of both (Arganata, 2016; Phomsoupha & Laffaye, 2015). The characteristics of the game of Badminton require a variety of significant physical abilities. , to be able to play badminton effectively, a person must undergo

organized and continuous training to be able to master the technique of hitting the shuttlecock from various positions, including down, up, or from the side (Firdaus & Purnama, 2018) and also requires excellent physical performance.

Physical performance is a very vital element and is the main foundation in the development of techniques, tactics and strategies in various types of sports specifically for badminton (Lisdiantoro & Utomo, 20 C.E.; Zhu et al., 2017). Several components of physical condition include strength, endurance, muscle explosive power, speed, coordination, flexibility, agility, balance and reaction. In badminton, apart from speed and agility, factors such as explosive strength, shoulder strength, and muscle endurance also have an important role in improving the physical performance of badminton athletes (Zhannisa & Sugiyanto, 2015). Badminton has the characteristics of a game with a very high intensity of physical use. high, therefore a badminton player's physical condition must be prime to complete a match or during training (Majumdar, 1997).

According to Astuti, "Anthropometry (somatotype) is a specific index that describes a person's stature, height, weight and body fat deposits." According to Horswill CA, in Robinson's research, (2014) stated that "The general physiologic profile of successful wretlers is high anaerobic power and capacity, masculine strength, above average aerobic power, exceptional flexibility, fat free mess and a mesomorphic somatotype". Badminton athletes have an ideal body which is highly expected by a coach, apart from expecting an ideal body they also hope to have good physical capacity and talent too. In general, human body types consist of: (1) endomorphy type, (2) mesomorphy type, (3) ectomorphy type (Fajeri, 2017; Kutseryb et al., 2017). The somatotype system is used to classify human body shape into three categories: ectomorph, mesomorph, and endomorph. Ectomorph is related to height and weight, mesomorph is related to muscle, while endomorph is related to body fat (Maulina, 2018) therefore Somatotype is an important parameter in determining the ideal body shape for a person in various sports in improving the athlete's current performance results. training or competing (Kustiawan & & Perkasa, 2020; Yana et al., 2023).

Therefore, it is necessary to research the physical condition profile and somatotype of female junior badminton athletes with the aim of knowing the physical performance and body somatotype of junior badminton athletes in Semarang City so that they can provide maximum results at a later age. Basically, badminton athletes really need the right body shape to produce good quality.

## METOD

From the problems that have been formulated, the research method in this study is quantitative with a descriptive approach method. The research sites in Gor Sinar Kasih Gor Ibu Gor Sumber are all in the Semarang area. Research time 1 November 2024 to 2 December 2024 (1 calendar month). The research population consisted of 10 athletes with an age range of 10-12 years who had won championships, samples were taken using a purposive sampling technique in the city of Semarang. The physical test and somatotype measurement instruments use physical tests (Wiyanto, 2020) and the somatotype measurement instruments use the Heath & Carter formula (Carter & Heath, 1990; Penggalih et al., 2018).

Procedures need to be described according to the type of research. How the research is carried out and the data will be obtained, needs to be described in this section.

## RESULT AND DISCUSSION

Table 1. Level of physical condition of female badminton athletes aged 10-12 years

Interval skor	category	frekuensi	persen
37-45	very good	2	20%
28-36	good	6	60%
19-27	currently	2	20%
10-18	not enough		
1-9	Very little		

The results of the physical tests for female badminton athletes aged 10-12 years were in the very good category 2 athletes (20%), in the Good category there were 6 athletes (60%) and in the Medium category there were 2 athletes (20%).

Tabel 2. Somatotype female badminton athlete aged 10-12 years

Somatotype	frekuensi	persen
<i>Endomorph</i>	-	-
<i>Mesomorph</i>	3	30%
<i>Ectomorph</i>	7	70%

The results of measuring the somatotype of female badminton athletes aged 10-12 years were in the Mesomorph category of 3 athletes (30%), in the Good category there were 7 athletes (60%) and in the Endomorph category there were none.

## DISCUSSION

The research aims to determine the physical condition and body somatotype type of female badminton athletes aged 10-12 years in Semarang City. Athletes who have the physical capacity and ectomorph somatotype type tend to be more agile in making movements when competing and have good physical capacity compared to mesomorphs. In the sport of badminton, those who have good physical performance and a body that matches its characteristics will increase the performance results of an athlete to a higher level because with a good physique and a body type that matches the characteristics, it will be easier to make more efficient movements, for example when chasing a shuttlecock, doing a smash and then chasing it is basically continuous individual sport badminton before the shuttlecock falls. This is also confirmed by research conducted by (Fitriady et al., 2020) concluding that there is a significant relationship between anthropometry and athlete appearance, which substantially influences athlete performance. It is important to pay attention to anthropometry because this factor plays a role in supporting the quality of an athlete's game so that optimal results can be achieved.

## CONCLUSION

The results of this study show that from the physical tests of female badminton athletes aged 10-12 years, there are 2 athletes in the very good category, 6 athletes in the Good category (60%) and 2 athletes in the Medium category (20%). And the results of measuring the somatotype of female badminton athletes aged 10-12 years were in the Mesomorph category of 3 athletes (30%), in the Ectomorph

category there were 7 athletes (60%) and there were no Endomorph categories. Badminton athletes aged 10-12 in the city of Semarang have a good level of physical condition and are of the Ectomorph somatotype type which tends to be tall, with little body fat and small.

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