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RESEARCH ARTICLE

Morphometric identification of Bursa Oynarı pigeon varieties

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Bursa Oynarı güvercin varyetelerinin morfometrik tanımlaması

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Öz

Amaç: Bu çalışma, Bursa Oynarı güvercinlerde Karabaş, Yaşmaklı, Muskalı, Kalaça ve Beyaz genotiplerin erkek ve dişi bireylerinde morfometrik tanımlama yapmak amacıyla yürütülmüştür.

Gereç ve Yöntem: Bu amaçla her bir genotipten 12-14 aylık 10 dişi ve 10 erkek olmak üzere toplam 100 güvercinde incelemeler yapılmıştır.

Bulgular: Oynar ırkında canlı ağırlık ortalaması 306.27±1.32 g bulunmuştur. Canlı ağırlık bakımından erkek ve dişiler, genotipler ve cinsiyet x genotipler arasındaki interaksiyonlara ait ortalamalar benzer çıkmıştır (p>0.05). Baş uzunluğu erkeklerde yüksek saptanmış (p<0.05), diğer vücut özellikleri bakımından erkek ve dişiler arasındaki farklılıklar önemsiz tespit edilmiştir (p>0.05). Gaga uzunluğu, gaga derinliği, gövde uzunluğu, vücut uzunluğu, kanat uzunluğu, göğüs çevresi, göğüs derinliği, kuyruk uzunluğu bakımından genotiplerde farklı ortalamalar belirlenmiştir (p<0.05). Genel olarak Yaşmaklı genotipinde diğer genotiplerden daha düşük, Beyaz ve Muskalı genotiplerde daha yüksek ortalamalar tespit edilmiştir (p<0.05). Cinsiyet ve genotipler arasındaki etkileşim gaga derinliğinde önemli hesaplanmıştır (p<0.001).

Öneri: Sonuç olarak, Oynar ırkının varyetelerinde ilk kez tespit edilen özelliklerin bu ırkın tanımlanmasına katkı sağlayacağı düşünülmüştür. Ayrıca varyetelerin vücut yapılarındaki farklılıkların uçuş özellikleri üzerine etkili olabileceği, bu konudaki bulguların güvercin yetiştiricilerinin ilgisini çekeceği kanaati oluşmuştur. Vücut yapıları göz önüne alındığında, Kalaça, Muskalı ve Beyaz genotiplerin uçuş süresi bakımından, Yaşmaklı genotipinin ise uçuş hızı bakımından üstün özelliklere sahip olabileceği tespit edilmiştir.

Anahtar kelimeler: Bursa Oynarı, cinsiyet, güvercin, morfolojik tanımlama, varyete

Abstract

Aim: This study was carried out to make morphometric identification of male and female individuals of Karabaş, Yaşmaklı, Muskalı, Kalaça and Beyaz genotypes in Bursa Oynarı pigeons.

Materials and Methods: For this purpose, a total of 100 pigeons, 10 females and 10 males, 12-14 months from each genotype, were examined.

Results: : The Oynar breed's average live weight was determined to be 306.27±1.32 g. Average body weights for males and females, genotypes, and gender x genotypes were discovered to be similar (p>0.05). Males were found to have longer heads (p<0.05), but there was no statistically significant difference between males and females in terms of other body traits (p>0.05). Different averages were determined in the genotypes in terms of beak length, beak depth, trunk length, body length, wing length, chest circumference, chest depth, and tail length (p<0.05). In general, the averages were lower in the Yaşmaklı genotype than in other genotypes, and higher in the Beyaz and Muskalı genotypes (p<0.05). The interaction between gender and genotypes was significant in beak depth (p<0.001).

Conclusion: As a result, it was anticipated that the characteristics detected for the first time in the Oynar breed varieties would contribute to the definition of this breed. It was also estimated that differences in the body structures of the varieties may impact their flight characteristics, and the findings on this subject will attract the attention of pigeon breeders. Considering their body structures, it was determined that the Kalaça, Muskalı, and Beyaz genotypes may have superior characteristics in terms of flight time, and the Yaşmaklı genotype may have superior characteristics in terms of flight speed.

Keywords: Bursa Oynarı, gender, morphological identification, pigeon, variety

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Introduction

The domestic pigeon (*Columb livia domestica* or *Columba livia forma domestica*), a member of the Columidae family, is a subspecies originating from the rock pigeon. The rock pigeon, from which domestic pigeons originate, is known as the oldest domesticated bird species in the World (Krautwald-Junghans et al 2009). Compared to their wild ancestors, domestic pigeons; differ significantly in terms of the structure, distribution, length, and color of their feathers, and anatomical structure of their head, beak, and claws (Balci et al 2018). Turkiye is known as the homeland of birds with different colors, singing abilities, and performance characteristics in terms of pigeon breed diversity (Erdem et al 2018, Yildirim et al 2018, Özbaşer et al 2021). Roller group is a group in which pigeons are classified according to their flying performance. Seven of the eight pigeon breeds in this group (Bursa, Çakal, Çorum, İzmir, Mulakat, Ottoman, Takla, Trakya) were or are raised in different regions in Turkiye (Yilmaz et al 2013). These pigeons are not tumblers, but they move in a spiral shape in the air, gliding downwards with the head moving backward in the direction of the tail. The pigeons quickly lose height during this reel movement and then resume their normal flight and rise again. The Oynar breed is one of the most important members of this group. The breed of pigeons has a long history that dates back to the Ottoman Empire, continues to exist as an important and valuable genetic resource of our country, and has been registered as a breed (Balci et al 2018). The fact that the breeding tradition dates back to the Ottoman Empire increases the cultural and historical importance of the Oynar breed. This breed, which is bred intensively in and around Bursa province, is defined as a "Bursa Bird". In the Thrace region, this bird, known as "Kesme", entered the world literature as "Bursa Roller" or "Bursa Tümmler". It is preferred due to its features such as its cheerful and active nature, timid demeanor, flight ability, and feather structure. In terms of color characteristics, there are varieties called Karabaş, Yaşmaklı, Muskalı, Kalaça, and Beyaz. In the colored genotypes of the Bursa Oynarı breed, white color can be found on the tail and wings. These animals, called White Wings and White Tails, are much more preferred by breeders (Soysal et al 2011, Atasoy et al 2013).

Even though the Oynar breed and other genotypes have been the subject of morphological and morphometric studies in Turkiye, it is evident that the number of scientific studies to determine our existing genetic resources is very low (Özbaşer et al 2013, Balci et al 2018, Özbaşer et al 2021).

The current research was conducted differently from other research to describe the Oynar breed in detail and to present scientific data about the genotypes called Karabaş, Yaşmaklı, Muskalı, Kalaça, and Beyaz. The main goal of the research is to document the Oynar breed in detail and examine the differences between its varieties.

Material and Methods

Material

The animal material of the research consisted of pigeons registered to the Turkiye Pigeon Federation, Bursa Oynarı Pigeon Lovers and Breeders Association. For this purpose, body measurements were taken from a total of 100 pigeons, 20 from each genotype, 10 females and 10 males, belonging to 5 different varieties. The research was conducted between 15-30 April 2023. Care was taken to ensure that the pigeons were of adult age (12-14 months). The pigeons included in the research were first weighed with a gram-precision scale to determine their live weight, and then the following body measurements were taken.

Methods

A measuring tape, ruler, and digital caliper were used to take body measurements. All measurements were taken by the same person (Figure 1).

The order p-a-s (primary-axial-secondary) was followed in wing feather count. All feathers were recorded by counting. Both the right and left legs and wings were used to take wing and shin measurements.

Statistical analysis

A two-way analysis of variance was carried out utilizing the GLM approach for analysis after the data's normal distribution was confirmed (Shapiro-Wilk Test). In the analyses, gender and genotype were considered as factors, and the main effects of these data and interactions between the factors were calculated. In cases where the differences between the factors were found to be significant ($p<0.05$), the Tukey HSD test was used for further analysis. The statistical analysis of the data was performed using the SPSS 22 package application. Differences were deemed significant when $p<0.05$. The averages of the parameters and the standard errors of the averages are presented in the tables. Maximum and minimum values and % coefficients of variation in the examined characteristics of general, male and female, and five varieties are presented in the tables.

Results

Morphometric characteristics of general, male and female, Yaşmaklı, Kalaça, Karabaş, Muskalı, and Beyaz genotypes in the Bursa Oynarı breed and the interactions between gender and genotypes in these characteristics are presented in Tables 1 and 2.

According to Table 1, the Oynar breed's average live weight, beak length, and beak depth were determined to be 306.27±1.32 g, 27.81±0.10 and 10.71±0.08 mm, respectively, and average body weights, beak length, and beak depth between males and females were discovered to be similar

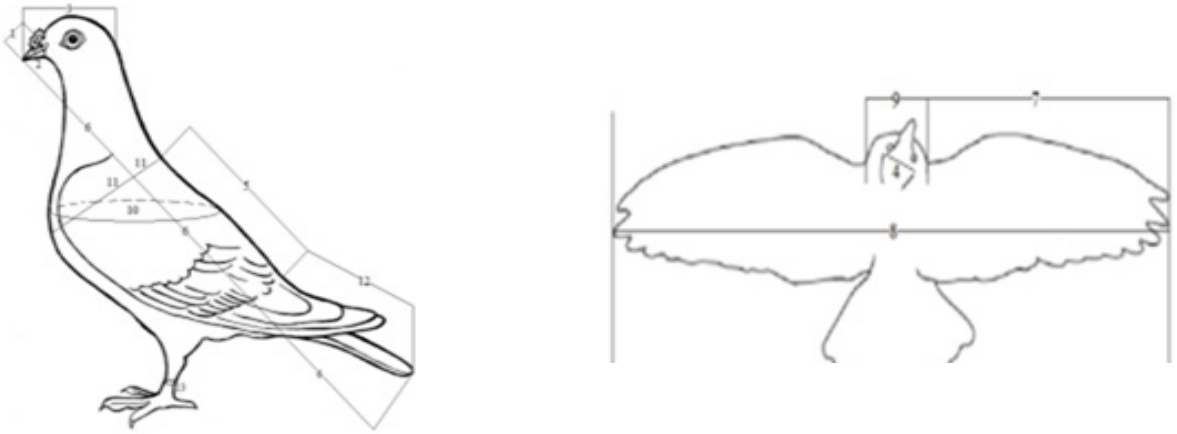

Figure 1. Taking body measurements in pigeons (Atasoy et al 2013) 1-Beak length; 2-Beak depth; 3-Head length; 4-Head width; 5- Trunk length; 6-Body length; 7-Wing length; 8-Wingspan; 9-Chest width; 10-Chest circumference; 11-Chest depth; 12-Tail length; 13-Shank diameter. 1. Beak length: From the upper beak's tip to the beak feathers, 2. Beak depth: Between the upper and lower parts of the middle part of the beak, 3. Head length: Between the condylus occipitalis and the upper beak's tip, 4. Head width: Between the extreme points on the left and right sides of the skull, 5. Trunk length: From the last pygostyle to the first thoracic vertebra, 6. Body length: Extending from the longest tail feather to the tip of the upper beak, 7. Wing length: Between shoulder joint and longest flight feather, 8. Wingspan: Between the longest flight feathers of two wings, 9. Chest width: Between the right and left glenoid cavity, 10. Chest circumference: Under the two wings, along the extreme point of the breastbone, 11. Chest depth: Between the firstthoracic vertebra and the extreme point of the sternum, 12. Tail length: Between the tail root of the tail and the longest tail feather, 13. Tarsus diameter: It will be measured from the middle of the tarsometatarsus bone..

Table 1. Morphometric measurements of research groups (I)

General		306.27	27.81	10.71	51.91	22.29	9.71	33.08	31.82	68.16
Male		307.90	27.83	10.82	52.23	22.35	9.75	33.13	31.93	68.32
Female		304.57	27.79	10.59	51.57	22.24	9.66	33.02	31.70	67.98
P		0.249	0.738	0.062	0.041	0.513	0.565	0.450	0.224	0.137
Yaşmaklı		312.78	27.11^{b}	10.03^{c}	52.00	21.79	10.00^{a}	33.20^{b}	31.27^{b}	67.97
Kalaça		303.28	27.61^{ab}	10.67^{b}	52.32	22.18	9.65^{ab}	33.47^{a}	32.10^{ab}	68.52
Karabaş		305.99	27.91^{ab}	10.62^{bc}	51.37	22.52	9.27^{b}	33.32^{a}	31.25^{b}	67.57
Muskalı		305.44	28.29^{a}	10.89^{ab}	52.14	22.51	10.02^{a}	33.52^{a}	32.27^{a}	68.42
Beyaz		303.86	28.13^{a}	11.35^{a}	51.72	22.47	9.60^{ab}	32.87^{ab}	32.20^{a}	68.30
P		0.179	0.001	<0.001	0.372	0.094	0.005	<0.001	0.001	0.059
	Yaşmaklı	313.58	27.38	10.51^{b}	52.29	21.90	10.09	32.09	31.63	68.36
	Kalaça	306.36	27.50	10.45^{b}	52.62	22.27	9.65	33.55	32.00	68.55
Male	Karabaş	306.43	28.07	10.92^{ab}	51.42	22.40	9.35	33.15	31.20	68.15
	Muskalı	308.58	28.14	10.92^{ab}	52.38	22.53	10.05	33.80	32.65	68.30
	Beyaz	304.01	28.11	11.35^{a}	52.47	22.59	9.60	33.20	32.20	68.25
	Yaşmaklı	311.80	26.78	9.43^{C}	51.64	21.65	9.88	32.33	30.83	67.50
	Kalaça	300.20	27.73	10.89^{AB}	52.02	21.99	9.65	33.40	32.20	68.50
Female	Karabaş	305.56	27.75	10.32^{B}	51.32	22.64	9.20	33.50	31.30	67.00
	Muskalı	302.31	28.45	10.87^{AB}	51.90	22.50	10.00	33.25	31.90	68.55
	Beyaz	303.71	28.16	11.36^{A}	50.98	22.36	9.60	32.55	32.20	68.35
P		0.914	0.535	0.007	0.729	0.879	0.987	0.401	0.349	0.212
SEM		1.32	0.10	0.08	0.16	0.10	0.07	0.11	0.11	0.01

a, b, c and A, B, C: Differences between values expressed with different letters in the same column are important p<0.05).

Table 2. Morphometric measurements of research groups (II)

Features		Chest width (mm)	Chest cir. (cm)	Chest depth (mm)	Tail lenght (cm)	Tarsus dmt. (mm)	Primary str. (adet)	Axial str. (adet)	Secondary str. (adet)
General		51.97	26.94	61.69	13.94	5.43	7.09	6.36	6.25
Male		52.26	26.87	61.82	13.97	5.44	7.15	6.45	6.13
Female		51.68	27.01	61.55	13.91	5.42	7.02	6.26	6.36
P		0.262	0.554	0.547	0.326	0.571	0.374	0.258	0.229
Yaşmaklı		51.33	25.97^{b}	60.07^{b}	13.68^{b}	5.48	7.05	5.85	6.50
Kalaça		52.17	27.02^{a}	61.85^{ab}	14.00^{ab}	5.43	7.10	6.70	6.05
Karabaş		53.44	27.12^{a}	61.72^{ab}	13.90^{ab}	5.46	6.95	6.30	6.05
Muskalı		51.33	27.25^{a}	62.24^{ab}	14.04^{a}	5.40	7.15	6.45	6.30
Beyaz		51.41	27.32^{a}	62.56^{a}	14.10^{a}	5.40	7.20	6.50	6.35
P		0.243	<0.001	0.049	0.003	0.682	0.853	0.056	0.484
	Yaşmaklı	52.43	26.04	60.52	13.85	5.51	7.36	5.72	6.19
	Kalaça	52.27	27.15	61.94	14.01	5.38	6.90	6.80	6.00
Male	Karabaş	52.66	27.15	62.03	13.92	5.49	7.10	6.80	5.80
	Muskalı	52.45	26.95	62.35	14.03	5.44	7.00	6.50	6.20
	Beyaz	51.49	27.15	62.40	14.06	5.41	7.40	6.50	6.50
	Yaşmaklı	49.98	25.88	59.51	13.47	5.43	6.66	6.00	6.88
	Kalaça	52.07	26.90	61.77	13.99	5.49	7.30	6.60	6.10
Female	Karabaş	53.44	27.10	61.42	13.88	5.44	7.00	5.80	6.30
	Muskalı	51.33	27.55	62.14	14.04	5.37	7.30	6.40	6.40
	Beyaz	51.41	27.50	62.72	14.13	5.39	7.00	6.50	6.20
P		0.403	0.439	0.957	0.316	0.560	0.131	0.241	0.559
SEM		0.27	0.09	0.28	0.04	0.02	0.08	0.09	0.10

a,b: Differences between values expressed with different letters in the same column are important (P<0.05). Cir: Circumferrence, Dmt: Diameter, Str: Strands

(p>0.05). The longest beak was obtained in the Muskalı and Beyaz genotypes, and the shortest in the Yaşmaklı genotypes (p<0.001). Similar findings were also obtained in beak depth (p<0.001). When we look at the interaction averages, the highest average in males and females was obtained in the Beyaz genotypes, and the lowest average was obtained in the Yaşmaklı genotypes. Head length was measured as 51.91±0.16 mm, and the head length of males was found to be longer than females (p<0.05). This trait was similar across genotypes (p>0.05). The averages of head width, trunk length, body length, wing length, and wingspan were found to be 22.29±0.10 mm, 9.71±0.07 cm, 33.08±0.11 cm, 31.82±0.11 cm, 68.16±0.01 cm, respectively. Male and female pigeons had similar values in terms of these parameters (p>0.05). The highest trunk length was in Muskalı and Yaşmaklı, and the lowest in Karabaş (p<0.01); the lowest body length was in Yaşmaklı (p<0.001); the highest wing length was measured in Muskalı and Beyaz genotypes, and the lowest was in Yaşmaklı and Karabaş genotypes. Intractions were calculated to be negligible in all properties except beak depth.

According to Table 2, the averages of chest width, chest circumference, chest depth, tail length, and tarsus diameter were measured as 51.97±0.27 mm, 26.94±0.09 cm, 61.69±0.28 mm, 13.94±0.04 mm, and 5.43±0.02 mm, respectively. The characteristics examined in males and females were found to be similar (p>0.05). Chest circumference (p<0.001), chest depth (p<0.05), and tail length (p<0.01) were lowest in the Yaşmaklı genotype and highest in the Muskalı and Beyaz genotypes. Interactions were calculated to be insignificant in the examined variables (p>0.05). There was no difference between the research groups in terms of the number of strands. In the Oynar breed, the number of primary feathers was 6-7, the number of axial feathers was 5-6, and the number of secondary feathers was 6-7.

The maximum and minimum values of the examined traits in general, male and female pigeons in the Oynar genotype, and in the Yaşmaklı, Kalaça, Karabaş, Muskalı, and Beyaz genotypes, and the %variation coefficients of these values are presented in Tables 3 and 4.

Table 3. Maximum, minimum values and % coefficients of variation of the features of the research groups

Features	General			Female			Male		
	Min	Max	%Var	Min	Max	%Var	Min	Max	%Var
Live weight	278.5	357.6	4.32	278.5	357.6	4.65	286.3	336.0	3.91
Beak lenght	24.3	29.8	3.67	24.3	29.8	3.74	24.8	29.5	3.64
Beak depth	8.3	12.5	7.77	8.8	12.5	6.39	8.3	12.3	8.98
Head lenght	20.2	24.8	4.47	20.4	24.8	4.79	20.2	24.2	4.14
Head width	20.2	24.8	4.47	20.4	24.8	4.79	20.2	24.2	4.14
Trunk lenght	54.1	69.6	4.55	56.8	69.6	4.65	54.1	66.9	4.48
Body lenght	30.5	35.5	3.31	30.5	35.5	3.43	30.5	35.5	3.21
Wing lenght	29.0	34.0	3.48	29.0	34.0	3.53	30.0	34.0	3.42
Wingspan	64.0	70.5	1.74	65.0	70.5	1.61	64.0	70.5	1.86
Chest width	44.3	58.00	5.26	46.0	58.0	5.01	44.3	56.6	3.67
Chest cir.	23.5	28.5	3.52	23.5	28.5	3.39	24.5	28.5	5.50
Chest depth	54.1	69.6	4.55	56.8	69.6	4.65	54.1	66.9	5.50
Tail lenght	12.4	15.0	2.77	12.4	15.0	2.63	12.4	14.9	4.48
Tarsus dmt.	4.8	6.1	3.65	5.2	6.1	3.70	4.8	5.8	3.62
Primary str.	5.0	8.0	11.00	5.0	8.0	10.59	5.0	8.0	11.44
Axial str.	4.0	8.0	14.74	5.0	8.0	14.97	4.0	8.0	14.49
Secondary str.	4.0	9.0	15.82	4.0	9.0	17.25	5.0	9.0	14.23

Cir: Circumferrence, Dmt: Diameter, Str: Strands

Discussion

Turkiye has different categories of pigeons such as tumblers, divers, rollers, spinners, fleet flyers, postmen, etc., depending on their flying style and the behavior they display during flight. It has been identified as the homeland of many pigeon genotypes showing different characteristics (Soysal et al 2011, Yilmaz et al 2013, Özbaşer et al 2013). Bursa Oynarı pigeons are fast, agile roller pigeons with the ability to suddenly rise, descend, and change direction. In the research, the live weight of the Oynar breed was found to be approximately 306.27 g, and no significant difference in live weight was detected between pigeons with different genders and varieties. Due to the negative effect of high live weight on the above-mentioned flight abilities of pigeons, the pigeons must comply with the declared standards to demonstrate their flight abilities well. In this study, the average live weight determined for the pigeons was consistent with the values reported for this breed in different studies (Balci et al 2018).

In this research, it was determined that males in the Oynar breed had longer heads, while males and females were similar in terms of other body characteristics. Balci et al (2018) found body length, leg length, and tail length values in male individuals to be higher than in females in the Oynar breed. Atasoy et al (2013) stated that male pigeons received higher values than females in terms of body length, wing span, wing length, and tail length in tumbler pigeons raised in Ankara. In the research conducted by Özbaşer et al (2013) on fleet pigeons, they found significant differences between males and females in terms of wing span, chest circumference, head length, and beak length. Soysal et al (2011) emphasized that male and female pigeons in the Thracian Makaracı race had similar values in all characteristics except body length. In various studies (Atasoy et al 2013, Özbaşer et al 2013, Balci et al 2018, Erdem et al 2021), differences between males and females have been associated with sexual dimorphism. On the other hand, sexual dimorphism is a major criterion in choosing mates between the sexes. It is known that sexual dimorphism is more important, especially in species where there is competition in mating. Most Passerines are monogamous, with Columbidae being one of the monogamous ones. Male sexual competition is more intense in polygamous species than in monogamous species. Consistent with the results of this study, this explanation accounts for the modest dimorphism among races in the physical characteristics of pigeons in the wild or breeder conditions (Savaş and Erdem 2022).

In this research, unlike other studies, the characteristics of five varieties of Bursa Oynarı pigeons were examined for the first time. Although live weights were similar, the lowest values in terms of body length, beak length and depth, chest circumference, chest depth, and tail length were obtained in the Yaşmaklı genotype, while wing length was obtained

Table 4. Maximum, minimum and % coefficients of variation of the traits of the examined varieties

		Live weight	Beak lenght	Beak depth	Head lenght	Head width	Trunk lenght	Body lenght	Wing lenght	Wingspan	Chest width	Chest cir.	Chest depth	Tail lenght	Tarsus dmt.	Primary str.	Axial str.	Secondary str.
Yaşmaklı	Min	278.5	24.3	8.3	20.2	20.2	54.1	30.5	29.0	65.0	44.3	23.5	54.1	12.4	4.8	6.0	4.0	4.0
	Max	357.6	29.1	11.6	23.4	23.4	69.6	34.0	34.0	70.5	55.9	28.0	69.6	15.0	6.1	8.0	7.0	9.0
	%Var	6.6	4.8	9.8	4.4	4.4	6.4	3.0	4.6	2.2	6.9	4.3	6.4	5.3	5.8	2.2	3.3	5.1
Kalaça	Min	280.4	26.1	9.7	20.6	20.6	57.6	31.5	31.0	67.0	47.2	25.5	57.6	13.7	5.2	5.0	5.0	5.0
	Max	321.2	29.3	11.8	24.7	24.7	66.7	35.5	34.0	70.0	56.3	28.5	66.7	14.3	5.7	8.0	8.0	8.0
	%Var	3.4	3.1	5.1	4.7	4.7	4.0	3.5	2.7	1.2	5.2	2.8	4.1	1.1	2.7	2.7	2.9	3.7
Karabaş	Min	287.3	26.4	9.6	21.1	21.1	56.3	32.0	30.0	64.0	46.8	26.0	56.3	13.6	5.2	5.0	5.0	5.0
	Max	324.2	29.6	11.8	24.2	24.2	65.4	35.0	34.0	70.0	58.0	28.5	65.4	14.2	6.0	8.0	8.0	7.0
	%Var	3.4	3.0	6.0	4.2	4.2	4.1	2.9	2.9	2.1	5.3	2.7	4.1	1.2	3.4	2.9	3.5	3.1
Muskalı	Min	287.7	26.5	8.8	21.0	21.1	59.5	32.0	31.0	67.0	48.1	26.0	59.5	13.7	5.2	6.0	5.0	5.0
	Max	323.6	29.8	12.5	24.5	24.5	66.7	35.0	34.0	69.5	55.8	28.5	66.7	14.4	5.6	8.0	8.0	7.0
	%Var	3.7	3.1	7.6	4.1	4.1	3.1	2.7	2.7	1.2	3.9	2.6	3.12	1.24	2.2	2.3	3.4	2.6
Beyaz	Min	289.4	26.5	10.6	20.9	20.9	58.5	31.5	31.0	67.0	48.3	26.0	58.5	13.8	5.2	6.0	5.0	5.0
	Max	321.6	29.3	12.3	24.8	24.8	66.7	34.5	34.0	70.5	56.8	28.5	66.7	14.9	5.7	8.0	8.0	7.0
	%Var	2.7	2.6	4.5	4.3	4.3	3.8	2.6	2.63	1.3	4.1	2.4	3.8	1.6	2.9	2.4	1.5	2.6

Cir: Circumferrence, Dmt: Diameter, Str: Strands

in the Karabaş and Yaşmaklı genotypes. The lowest body length was found in the Karabaş genotype. In line with these findings, it was determined that the Yaşmaklı genotype had a smaller structure than other genotypes. It was revealed that varieties of Muskalı and Beyaz had higher values in most of the examined characteristics. In the research, various relationships have been established between body characteristics and flight abilities in birds (Balci et al 2018). Pigeons are fast and constantly flying bird species. They must exert minimal effort throughout their flight and reduce drag at high speeds. Their small body area and small wingspan are important for them to reach higher speeds in the air with less effort (Balci et al 2018). Considering this information, it is thought that Yaşmaklı and later Karabaş genotypes may be superior. In another study conducted on a different species (Atasoy et al 2013), it was reported that birds with a larger wingspan were advantageous in terms of staying in the air for longer periods. Although it was determined that the difference between the varieties in terms of wingspan was not significant, considering the numerical differences obtained, it is thought that Kalaça, Muskalı, and Beyaz genotypes may be superior to Karabaş and Yaşmaklı in terms of time in the air. One of the factors affecting the flight performance of birds is the tail structure. The tail helps birds maintain balance, change direction, and slow down during flight (Özbaşer et al 2013). In the current study, the tail length of the Oynar breed was measured as 13.94 cm. It was determined that the Beyaz and Muskalı genotypes were superior in terms of tail length, and these genotypes were followed by the Kalaça, Karabaş, and Yaşmaklı genotypes. It is predicted that the difference in tail structure may be advantageous in the Beyaz and Muskalı genotypes.

In the other studies conducted on roller pigeons; Soysal et al (2011) found that the live weight, body length, and chest width values of Thracian roller pigeons were higher than the values obtained for the Oynar pigeons in this study, their wingspan was similar, and their beak length was lower. Özbaşer et al (2021) found that the live weight of the Jackal, Mülakat, and Oriental genotypes of the Roller pigeons raised in the Marmara region was high, their head, body, and tail lengths and head width were similar, and their beak length and depth were lower than the values obtained in this research. Balci et al (2018) found that the live weight of the Oynar breed was higher than the values obtained in this study, the beak and tail lengths were similar, the body length and wingspan values were low, and the chest depth was high. It was determined that the differences between the examined traits were caused by genotype, age, care, and feeding conditions.

Conclusion

As a result, considering the differences in the characteristics examined in various studies, it has been observed that there are serious differences in body characteristics even within the same race. It has been concluded that the flight abilities of these varieties will also be different due to the difference in their body structures. While Kalaça, Muskalı, and Beyaz are supposed to have a longer flight time, Yaşmaklı genotype is thought to have a higher flight speed. Determining our genetic resources well is important for protecting biodiversity and transferring it to future generations. In this regard, more research is needed to obtain more information about the populations formed by these genotypes.

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Conflict of Interest

Author(s) declare(s) that there are no conflicts of interest related to the publication of this article.

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Ethical Approval

An application was made to Fırat University Non-invasive Research Ethics Committee for the research, dated 26.05.2022. Permission was received with protocol number 2022/07-07.