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THE PERRO DE PRESA CANARIO: GROWTH AND DEVELOPMENT ANALYSIS AND THE ASSESSMENT OF MENTAL PREDISPOSITIONS IN PUPPIES

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ABSTRACT

The Perro de Presa Canario is still an unexplored and underrated breed of dogs. The breed had been used in dog fighting and to protect human dwellings for ages. An analysis of biometric traits conducted between the birth and the age of 6 months has shown a harmonious and rapid puppy growth. Zoometric measurements and conformation indices in both dogs and bitches were found to be comparable. At age one week the reported body weight of the bitches was 498 g, and the dogs were heavier by 57 g. At six months of age, the bitches weighed approximately 16.35 kg, whereas the dogs were on average 2.15 kg heavier. Gender has been found to affect weight gains ($P \leq 0.01$) and the development of pectoral girdle ($P \leq 0.05$). The PAT and the Campbell tests results have clearly shown that the Perro de Presa Canario breed is very dominant. Besides, it appears to be stubborn, intelligent and committed.

Key words: dog, Perro de Presa Canario, growth and development, zoometric measurements, mental predispositions

INTRODUCTION

The Perro de Presa Canario belongs to a very demanding Molosser-type dog breed. It is a medium-size dog with a thick and muscular body. The dog is well-proportioned and rectangular in shape, i.e. the trunk is longer than the height at the withers. Its body manifests power, confidence, grandeur and equanimity. Its look connotes great intelligence, composure and alertness. These dogs have been shaped towards strengthening already muscular bodies and demonstrating aggressiveness. Owners' negligence regarding proper dog training, care and nutrition can easily lead to a development of bad habits and thus they might pose a threat to those around them. In order not to let any developmental disorders happen, owners socialize their puppies, which promotes optimal development in the offspring. They also do their best to select a suitable dog trainer for their pets and care for transmitting the knowledge based not only on clichéd theories but also on scientific research [Diederich and Giffroy 2006, Goleman 2010, Barnard et al. 2012, Ashera et al. 2013].

Between 2014 and 2016, 416 dogs were registered with the Polish Kennel Club, including 127 brood bitches and 63 dogs eligible for breeding. 255 puppies were born in 50 litters, which undoubtedly indicates that the Perro de Presa Canario breed is still not very popular in Poland presumably resulting from insufficient information and frequently unfair opinions on these dogs' nature [Polish Kennel Club 2016, 2017]. There are not many papers regarding the assessment of the Perro de Presa Canario puppies' early growth and development in the source literature. The mental predispositions tests results of the sample group have also been included in this paper.

MATERIAL AND METHODS

The study was conducted in accordance with the applicable Polish and EU animal protection regulations.

These studies were conducted on 48 Perro de Presa Canario puppies (25 females and 23 males). The puppies

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originated from kennels registered in the Polish Kennel Club. The bodyweight was determined in the breed one week of age (W1), three weeks of age (W3), seven weeks of age (W7) and six months of age (M6). Based on the results obtained, daily average growth was calculated between the first and the seventh week of age (W1–M7) and between the seventh week of age and the sixth month of age (W7–M6). Furthermore, zoometric measurements were taken using a measuring rod, compass and tape over the same time periods 11 measurements.

The measurable parameters were as follows: withers height (from the ground to the point where the neckline and the shoulder join) – P1, back length (from the line joining rear edges of shoulder blades to the line joining ilia) – P2, wrist girth (at its narrowest point) – P3, rib cage depth (from the top of the withers to the manubrium) – P4, rib cage girth (off rear edges of shoulder blades) – P5, diagonal trunk length (from the greater tuberosity of humerus to the ischiatic tuberosity) – P6, rump height (from the ground to the highest point at the rump) – P7, rib cage width width (between humeral protuberances) – P8, muzzle length (from the rhinarium to the stop) – P9, skull length (from the occiput to the stop) – P10, skull width (between the furthest points of temporal bones) – P11. The zoometric measurements were used to calculate the conformation indices (%), which were: depth, redevelopment, boniness, trunk length, body built, eurystomy and head size. The proportions of the muzzle length to the skull length have also been determined.

In order to define personality traits of the young, two tests to assess natural predispositions in puppies have been performed, the PAT test and the Campbell test. The obtained tests results were processed using Statistica 13.1 software. A one-way ANOVA has been performed for each characteristic studied.

RESULTS AND DISCUSSION

Body weight is one of the indicators of a newborn puppy health condition and development, hence it needs to be controlled. Body weight is also a key determinant of an average lifespan of a dog [Greer et al. 2007]. The body weight of the four studied age groups of puppies is compared in Table 1. By comparing the body weight of different age groups of dogs to the parallel age groups of bitches it has been clear that although the body weight of the dogs one week of age was greater, their weight gain has not increased as significantly as that of the puppies bitches, which is most evident while they grow between their 3rd week and 6th month of life. The bitches have gained weight eightfold, while the dogs sevenfold only. Despite more rapid growth, however, the six – month – old bitches are lighter than dogs the same age by approximately 2 kg. Statistically significant differences have been demonstrated in seven – week – old (P ≤ 0.05)

and six – month – old (P ≤ 0.01) puppies. Due to a very fast-paced growth and development of the Perro de Presa Canario, one should bear in mind a suitable balanced diet to meet all nutritional needs. This was confirmed by the studies carried out on puppies of various breeds by Sawosz [2001] and Hawthorne et al. [2004], Ochota et al. [2014], while the study carried out on the Siberian Husky puppies by Horoszewicz et al. [2015] reported that their body weight was greater in their first week of age. While analysing the German Shepherd litters, Wilsson and Sundgren [1998a] obtained the results which were in line with those of their own research. They argued that the size of a litter the puppies are born in is a contributory determinant of the body weight of particular individuals. Ochota et al. [2014] claimed that normal birth weight in large – sized breeds should be about 490 g. The results of their own research proved that.

Another factor affecting the control of normal growth is daily gains (Table 2). The analysis of the results of the study carried out between the first and the seventh week of age has indicated a more rapid growth in the bitches compared with the dogs by about 36 g, while between the second and the sixth month of age the weight gains greater by 42.5 g have been observed in the dogs. These values have been slightly above those obtained by Fiszdon and Kowalczyk [2009]. While analysing the changes in the body weight in various breeds puppies, Hawthorne et al. [2004] indicated that greater daily gains can be observed in large – sized breeds during the period of growth. They also emphasise that not only genetic factors related to a particular breed, but also gender affect daily gains. In their studies they proved much larger weight gains in the bitches compared with the dogs throughout the entire sample period. This was confirmed by the study carried out by Trangerud et al. [2007].

A large data collection of zoometric measuremets not only assists to assess age and health, but it also serves as a key to compare the animals within the same breed and gender, as well as determines their body types. They allow to define the changes in a breed phenotypic characteristics. Yet, their primary purpose is to assess the growth of young animals. The study conducted compared the zoometric measurements of the dogs and the bitches within particular age groups. Sexual dimorphism could hardly be observed in the first week of age (Table 3). That is evidenced by the values related to muzzle length, skull length, hips width, rump length and metacarpus girth in both the dogs and the bitches. The rib cage girth in the dogs was slightly bigger compared with this of the bitches. While the individuals were compared in their third week of age, a considerable disparity between the dog and the bitch was detected. The rib cage girth increased as well as its depth in favour of the dogs. It was also noticed that the dogs' forearms were longer by 2 cm and their rump was higher by 2 cm as well. And then,

Table 1. Body weight (kg) of Perro de Presa Canario puppies at the 1st, 3rd, 7th week and beginning of life 6 (x̄ ±SD)

Tabela 1. Masa ciała (kg) szczeniąt rasy dog kanaryjski w 1, 3, 7 tygodniu oraz 6 miesiącu życia (x̄ ±SD)

Sex – Płeć	W1	W3	W7	M6
♀	0.49 ±0.45	1.91 ±0.65	4.17[a] ±0.85	16.35[A] ±0.69
♂	0.55 ±0.21	2.64 ±0.94	5.80[b] ±1.02	18.50[B] ±1.13

W1 – one week of age, W3 – three weeks of age, W7 – seven weeks of age, M6 – six months of age; [a], [b] – the significance of differences at (P ≤ 0.05) level; [A], [B] – the significance of differences at (P ≤ 0.01) level.
W1 – pierwszy tydzień, W3 – trzeci tydzień, W7 – siódmy tydzień, M6 – szósty miesiąc; [a], [b] – istotność różnic na poziomie (P ≤ 0,05); [A], [B] – istotność różnic na poziomie (P ≤ 0,01).

Table 2. Daily weight gains (g) of Perro de Presa Canario dogs between 1 and 7 weeks of age and 2 and 6 months of age (x̄ ±SD)

Tabela 2. Dobowe przyrosty masy (g) psów rasy dog kanaryjski pomiędzy 1 a 7 tygodniem oraz 2 i 6 miesiącem życia (x̄ ±SD)

Sex – Płeć	W1–W7	W7–M6
♀	91.5[A] ±5.14	126.5[A] ±6.11
♂	55.5[B] ±2.14	169[B] ±7.68

W1–W7 – daily gains between 1 and 7 weeks of age; W7–M6 – daily gains between 2 and 6 months of age; [A], [B] – the significance of differences at (P ≤ 0.01) level.
W1–W7 – przyrosty dobowe pomiędzy 1 a 7 tygodniem życia, W7–M6 – przyrosty dobowe pomiędzy siódmym tygodniem a szóstym miesiącem życia; [A], [B] – istotność różnic na poziomie (P ≤ 0,01).

Table 3. Zoometric measurements (cm) of Perro de Presa Canario puppies at 1, 3, 7 and 6 months of age (x̄ ±SD)

Tabela 3. Pomiary zoometryczne (cm) szczeniąt rasy dog kanaryjski w 1, 3, 7 tygodniu oraz 6 miesiącu życia (x̄ ±SD)

Measurement – Pomiary	Sex – Płeć	W1	W3	W7	M6
P1	♀	13.65 ±2.86	18.60 ±1.17	20.50 ±1.21	41.25 ±1.43
	♂	14.30 ±3.05	19.75 ±3.75	22.5 ±1.28	41.10 ±1.26
P2	♀	13.80 ±1.84	16.85 ±1.56	20.00 ±1.64	37.40 ±5.64
	♂	14.25 ±1.94	18.05 ±2.77	25.00 ±1.95	37.75 ±5.23
P3	♀	5.45 ±0.79	8.10 ±0.80	8.50 ±0.64	13.90 ±0.21
	♂	5.50 ±0.70	8.70 ±1.00	9.00 ±1.03	14.90 ±1.02
P4	♀	7.00 ±0.54	8.65 ±1.49	16.00 ±1.62	30.05 ±5.47
	♂	7.40 ±0.65	11.05 ±2.42	15.50 ±2.53	25.60 ±5.54
P5	♀	20.20 ±3.30	28.60 ±3.87	35.50 ±3.89	60.90 ±0.84
	♂	21.10 ±3.08	30.90 ±4.22	45.50 ±3.85	61.30 ±0.98
P6	♀	14.40 ±2.07	17.55 ±2.39	29.50 ±2.51	40.90 ±2.31
	♂	14.85 ±2.10	18.05 ±1.97	30.00 ±2.07	39.50 ±3.10
P7	♀	12.05 ±2.70	17.75 ±1.20	23.50 ±1.60	38.85 ±1.31
	♂	12.40 ±2.81	19.50 ±4.26	22.50 ±3.82	40.20 ±1.60
P8	♀	5.00 ±0.50	7.40 ±1.12	14.50 ±1.20	19.25 ±1.08
	♂	4.95 ±0.59	8.20 ±1.20	16.00 ±1.42	17.55 ±1.94
P9	♀	1.75 ±0.48	4.50 ±0.63	4.50 ±0.71	5.65 ±0.70
	♂	1.75 ±0.42	3.65 ±0.62	4.50 ±0.71	5.40 ±0.70
P10	♀	3.70 ±0.78	7.80 ±0.88	8.50 ±0.92	11.70 ±1.37
	♂	3.80 ±0.71	8.10 ±0.99	9.00 ±0.93	11.50 ±1.35
P11	♀	3.55 ±0.64	8.90 ±1.50	8.90 ±1.52	13.10 ±1.50
	♂	3.80 ±0.78	9.40 ±1.22	9.40 ±1.30	13.55 ±0.72

W1 – one week of age, W3 – three weeks of age, W7 – seven weeks of age, M6 – six months of age.
W1 – pierwszy tydzień, W3 – trzeci tydzień, W7 – siódmy tydzień, M6 – szósty miesiąc.

in the dogs seven weeks of age an intensive growth took place. The difference in the ribcage girth, withers height and back height and length was also very clear. These discrepancies were 10 cm, 2 cm and 5 cm, respectively. Further growth was harmonious and did not demonstrate significant appearance variations.

Characteristics like forearms length and rib cage girth were the most similar. The rib cage depth and width were noticed to be slightly bigger in the group of 6 – month – old bitches, while the dogs were longer and subtly taller. The investigations carried out by Janeczek et al. [2004] on the American Staffordshire Terrier breed suggest considerable gender differences related to the withers height and the rib cage girth. While analysing the conformation of the Cane Corso dogs, Marelli et al. [2003] drew attention to gender disparities related to the withers height and the head dimensions. According to them, these data could be improved through suitable selection. The morphometric analysis of the Bracco Italiano breed carried out by Cecchi et al. [2015] showed a considerable variability in all the studied characteristics within both genders. Sechi et al. [2017] pointed out that analyses of this kind should necessarily be conducted in order to assess the data related to the proper application of the breeding plan in a particular breed.

Conformation indices enable the comparison of body types in animals. They also define the growth and development of individual body parts. As a result of the study, 8 conformation indices have been identified (Table 4).

It has been proved that the puppies 1 week of age have a considerably longer trunk compared with other studied periods. This has been confirmed by the trunk length index of 106.34 in the dogs and 107.49 in the bitches. The index indicating the growth of the pectoral girdle has been the highest in the dogs of 3 weeks of age. The body composition of the bitches and the dogs becomes slenderer and more proportionally built when they reach the age of 6 months, which is indicated by similar data related to sturdiness, boniness and head size.

To analyses more closely the growth of the puppies, their mental predispositions have been studied through two independent tests. One of them has been the PAT test whose results allow to determine the predispositions like temperament, willingness to cooperate with people, obedience as well as dominant behaviour and defensive reflexes tendencies. For each task, an animal can be awarded from 1 to 6 points. The pets awarded 3 points on most occasions are usually best suited for training, while those given 1 point for most tasks are the most independent and dominant. The dogs most frequently awarded 6 points, by contrast, are fit for being guard dogs, but, due to the fact they are not interested in people, they are difficult to train. As a result of these tests, most puppies, both the dogs and the bitches, have been awarded 3 points for most tasks, which shows they are willing to cooperate with people with the average involvement of an owner in the process of training. The group consisting of 60% of dogs and 30% of bitches has been awarded 2 points for most tasks,

Table 4. Comparison of conformation indices (%) in puppies of different ages ($\bar{x}$ ±SD)

Tabela 4. Indeksy pokrojowe (%) szczeniąt rasy dog kanaryjski ($\bar{x}$ ±SD)

Index – Indeks	Sex – Płeć	W1	W3	W7	M6
Depth Głębokości	♀	53.62 ±13.58	56.34 ±5.85	57.76 ±6.12	73.39 ±11.23
	♂	54.16 ±13.53	55.93 ±5.39	58.75 ±6.32	62.17 ±12.70
Redevelopment Przebudowania	♀	88.07 ±13.05	95.57 ±6.23	95.78 ±5.28	94.31 ±5.14
	♂	86.69 ±5.93	100.39 ±21.61	98.15 ±5.32	97.82 ±3.10
Boniness Kościstości	♀	41.16 ±9.47	43.54 ±3.20	39.67 ±1.84	33.73 ±1.45
	♂	39.79 ±9.12	44.80 ±5.62	40.78 ±1.92	36.24 ±2.12
Trunk length Długość tułowia	♀	107.49 ±15.94	94.16 ±8.44	96.66 ±7.54	99.29 ±7.11
	♂	106.33 ±17.64	92.95 ±10.60	95.87 ±7.48	96.14 ±7.55
Body built Bodowy ciała	♀	150.58 ±22.16	153.41 ±13.19	149.32 ±5.11	147.76 ±4.31
	♂	154.27 ±28.03	158.33 ±14.75	155.75 ±5.18	149.23 ±3.62
Eurystomy Zwięzłości	♀	140.56 ±12.12	163.20 ±9.43	147.55 ±9.12	149.38 ±9.68
	♂	142.63 ±12.65	171.18 ±13.77	156.67 ±9.15	155.95 ±11.50
Head size Wielkości głowy	♀	26.92 ±7.24	47.78 ±6.63	41.67 ±5.48	31.74 ±3.43
	♂	27.59 ±7.90	48.53 ±7.33	40.76 ±5.46	33.01 ±2.23

W1 – one week of age, W3 – three weeks of age, W7 – seven weeks of age, M6 – six months of age.
W1 – pierwszy tydzień, W3 – trzeci tydzień, W7 – siódmy tydzień, M6 – szósty miesiąc.

which shows their strong character, but, when properly trained, they will accept a human as their leader. The dogs perfect for families are those with 4 points awarded for most tasks and they have made a group consisting of 20% of bitches and 40% of dogs. There has been an identical group of dogs and bitches awarded 6 points for most tasks performed. Those data have proved that the puppies tested are mostly well-balanced with some dominant behaviour tendencies. The Campbell test is used to determine mental predispositions in puppies, as is the PAT test. It is based on 5 distinctive criteria. This test format has proved the dominant nature of the breed. Over 40% of the bitches have been found to be dominant. Furthermore, the study has identified 10% of fearful, anxious and inferior individuals in a group of the dogs. Wilsson and Sundgren [1998b] carried out some tests on the group of 8 – week – old German Shepherd puppies and their results suggest we are definitely not able to predict what the behaviour patterns of these animals will be like when they mature. It should not be forgotten, a new environment and, above all, an owner affect a dog's personality and behaviour significantly. Gazzano et al. [2008], however, indicated that puppy rearing in a stimulus – rich environment, through which a young animal will have an opportunity to develop greater emotional stability and therefore they will also learn new behaviours more easily in the future, is also of key importance.

CONCLUSION

The Perro de Presa Canario is still an unexplored and underrated breed. An analysis of the biometric traits conducted between the birth and the age of 6 months has shown a harmonious and rapid puppies growth. The zoometric measurements and conformation indices in both the dogs and bitches have been comparable. In the breed one week of age, the reported weight in the bitches was 498 g, and the dogs were heavier by 57 g. The daily gains obtained throughout the study period indicate proper and harmonious growth. Gender has been reported to affect the weight gain ($P \leq 0.01$). The PAT and the Campbell tests results have clearly shown that the Perro de Presa Canario breed is very dominant. Besides, it appears to be stubborn, intelligent and committed. And those characteristics in particular are very welcome among those who look for a great guard dog and a family companion and defender.

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DOG KANARYJSKI. ANALIZA WZROSTU I ROZWOJU ORAZ OCENA PREDYSPOZYCJI PSYCHICZNYCH SZCZENIĄT

STRESZCZENIE

Dogi kanaryjskie to rasa psów wciąż jeszcze mało znana i niedoceniana przez hodowców psów rasowych. Przez wieki wykorzystywana była do walk z innymi zwierzętami oraz do obrony siedlisk ludzkich. Przeprowadzona analiza biometrii rasy od urodzenia do 6 miesiąca życia wykazała harmonijny i szybki rozwój szczeniąt. Zarówno samce, jak i samice były wyrównane pod względem pomiarów zoometrycznych i indeksów pokrojowych. W pierwszym tygodniu życia suki średnio ważyły 498 g, a psy o 57 g więcej. W 6 miesiącu waga suk wyniosła średnio 16,35 kg, natomiast psy w tym wieku były cięższe średnio o 2,15 kg. Odnotowano wpływ płci na przyrosty masy ciała (P ≤ 0,01) oraz rozwój obręczy barkowej (P ≤ 0,05). Wyniki testu PAT oraz Campbella wyraźnie pokazały, że dogi kanaryjskie są rasą o dominującym charakterze. Poza tym charakteryzuje je upór, inteligencja, a także duże przywiązanie do rodziny.

Słowa kluczowe: pies, dog kanaryjski, wzrost i rozwój, pomiary zoometryczne, predyspozycje psychiczne

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