Body Measurements and Morphological Evaluation of Romanian Raven Shepherd Dog

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Abstract
Romanian Raven Shepherd Dog is the fourth breed of shepherd dog of national interest, formed in the area of the southern Carpathians and the related sub-Carpathian area. The breed is nationally recognized and approved in Romania, with a national breed standard. In order to be internationally approved, breed morphometric studies are required. The purpose of this study is to evaluate body measurements in certain target population of Romanian Raven Shepherd Dog in relation to the national breed standard.

Keywords: Romanian Raven Shepherd Dog,body measurements

1. Introduction

Romanian shepherd is the name given to large, robust dog breeds with good adaptability to the climatic conditions in our country, which are used to guard flocks and herds. Dogs have been used since ancient times in herding to defend herds of animals against the attack of wild animals (wolf, bear, lynx). Nowadays, shepherd dog breeds are considered family and guard dogs, being animals with a balanced temperament, affectionate through their behavioral manifestations towards children, being a good companion through their devotion and protectiveness towards their master. They are dogs with a strong personality and obey the one they recognize as their master [1].
The Romanian Raven Shepherd Dog is a strong dog, with an imposing waist. The body is covered with very thick fur that gives it good resistance to very low temperatures. The "Raven" is an intelligent, energetic and lively dog, calm and obedient, with a highly developed protective and guarding instinct. A dog breed will consistently produce the physical traits, movement and temperament that were developed over decades of selective breeding. For each breed they recognize, kennel clubs and breed registries usually maintain and publish a breed standard which is a written description of the ideal specimen of the breed. Currently, the "Romanian Raven Shepherd Dog" breed is recognized and nationally approved, having developed a National Breed Standard. For the international approval of the breed, the Specialized Commissions of the Fédération Cynologique Internationale (FCI) request detailed reports confirming the homogeneity and stability of the population studied by analyzing the basic canine indicators. Since at present the population of the Romanian Raven Shepherd Dog are sufficiently large and stable, the Romanian Kennel Club and the Romanian Raven Shepherd Dog Club has started the evaluation procedures for the provisional

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international homologation of the breed. For this purpose a national breed standard was drawn up to which all evaluation related to this breed are referred. The national standard was written in accordance with the model established by the 1978 FCI General Assembly in Jerusalem (updated in 2009) and approved by Romanian Kennel Club Directory Council in 14.11.2008 and updated in January 2021 [1, 2].

2. Materials and Methods

The studies were performed on the canine populations of "Romanian Raven Shepherd Dog" from the area of the Southern Carpathians and in the sub-Carpathian area related to the counties: Brasov, Prahova, Arges, Dambovita. The naturalized Romanian Raven Shepherd Dog population in Maramures county was also evaluated.

For the preparation of the approval file, breed-specific morphometric indicators that were recorded in the national breed standard were evaluated. The research was performed on a representative group of males and females (58 males and 58 females), using classical methods of zoometry. Only the dogs registered in the Romanian Studbook were taken in the study

The main body measurements studied were:

Height at withers (HaW)-distance from the highest point of the processus spinalis of the vertebra thoracica to the ground;

Body length (BL)-distance from the most cranial point of the sternum to the most caudal point of the tuber ischi;

Thoracic girth (ThG) -smallest circumference of cannon bone of the forelimb;

Thoracic depth (ThD)-distance from the left to the right point of the back;

Skull length (SL)-distance from the nape to the occipital crest;

Snout length (Sl) –distance from below eye base to the tip of nouse.

The measurements were obtained by using a measuring stick, a caliper and a tape measure [3-7] For a better accurency of the results and to avoid some possible technical errors, the measeurements were performed by the same person for all the canine specimens take in the study.

The values obtained by measurements were compared with the main demands of the national breed standard [8]. The data obtained were statistically processed with Student's Test [9].

3. Results and discussions

The results obtained from the measurements are summarized in table 1.

Table 1. The results of body measurements at Romanian Raven Shepherd Dog

Specification		Males (n=58)	Females (n=58)	*P* value
Body length (cm)	$\bar{x}$±SD	^{a}79.95±9.75	^{b}75.62±4.14	0.001181027
	V %	12.20	5.48	
Height at withers (cm)	$\bar{x}$±SD	^{a}73.42±3.04	^{b}68.51±2.95	0.000000000
	V %	4.14	4.31	
Thoracic girth (cm)	$\bar{x}$±SD	^{a}91.71±9.55	^{b}85.22±8.72	0.000109074
	V %	10.41	10.23	
Thoracic depth (cm)	$\bar{x}$±SD	^{a}38.16±4.21	^{b}35.67±3.85	0.000611036
	V %	11.03	10.78	
Skull length (cm)	$\bar{x}$±SD	^{a}16.47±1.26	^{b}15.54±1.64	0.000438361
	V %	7.68	10.58	
Snout length (cm)	$\bar{x}$±SD	^{a}13.92±1.65	^{b}9.16±1.04	0.000000000
	V %	11.84	11.31	

$\bar{x}$ -Mean, SD – Standard deviation, V% - coefficient of variation

^{a,b} Means with different superscript letters between columns differ signifiant ($P \leq 0.001$).

The data presented in Table 1 show a good homogeneity of the study population for the indicators followed (V≤15%). Also, for all the indicators studied, the analysis test of the variant showed statistically assured differences between the average values recorded in females and those recorded in males (P≤0.001).

If we refer to the basic criterion in the morphometric evaluation of the canine breeds-the height at the wither (HaW), it can be observed that all canine specimens taked in the study fall within the requirements imposed by the breed standard.

Thus, the standard requires a height at the withers between 70 and 80 cm for males and between 65 and 75 cm for females with ideal values of 75 cm for males and 70 cm for females. The average of the results obtained by measuring the height at the withers for the canine population studied was 73.42±3.04 for males and 68.71 68.51±2.95 for females.

It should be mentioned that according to the rigors of the standard, a height at the withers of less than 65 cm in males and 62 cm in females constitutes eliminatory defects in the case of these breeds. The results obtained in this study show a good homogeneity of this character within the population studied.

Regarding body length, the obtained results reveal a good homogeneity of this character in the studied populations, with average values of 79.95±9.75 for males and 75.62±4.14 for females

Sexual dimorphism is more obvious in the case of body length and height at the withers, and less obvious in the case of skull length

It should be mentioned that there are no differences in the morphological parameters between the populations in Brasov, Dambovita, Arges and Prahova counties, compared to the naturalized populations in Mamaramures county.

Since there is currently a trend of naturalization of the breed in the plain areas of Romania (Arad, Timis, Bihor) it is important to monitor if the naturalization in the plain areas could have an effect on the standard morphological parameters.

The measurement of body dimensions and their statistical processing provide important indications of the stability of morphological parameters in populations, their transmission and storage in offspring.

The relationship between morphology and function is commonly used and fixed in dog breed standards. The classification of animals in the breeds to which they belong is done according to the information revealed by their pedigree and the data expressed in the standard of each breed. In the case of Romanian Raven Shepen Dog, the animals were classified according to the criteria of the respective breeders' organizations.

In the future, it is also recommended for this dog breed to classify individuals according to the purpose for which they were bred, which shows high levels of correct assignment to the groups established by the FCI. If one accepts the existence of a morphological pattern for each breed, then one should also accept the existence of a common pattern related to the function, such as: guard, shepherd, hunter etc. Thus, a suprabreed pattern could be formed, which includes dogs that have been bred for a specific purpose.

4. Conclusions

The studied Romanian Raven Shepherd Dog populations are homogeneous and genetically stable for the morphological parameters studied.

We claim that the data obtained in this study will contribute to the international approval of the Romanian Raven Shepherd Dog which will contribute to the promotion of Romania internationally, the development of niche agrotourism, and the increase in the well-being of Romanian breeders of the Romanian Raven Shepherd Dog.

Acknowledgements

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