

## BODY AND INTENSITY OF GROWTH DEVELOPMENT OF SPECIFIC ROMANIAN BUCOVINA SHEPHERD DOG

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### Abstract

Forming the pedigree dogs of Bucovina, Romanian Shepherd (C.R.B.) is the result of a combination between the two basic ways in the formation of animal breeds, i.e. the influence of natural factors and human direct intervention in the selection of individuals which presented features, skills and a desirable exterior. The artisans of this breed have been along time Romanian shepherds who always considered a prerequisite to raise cattle dogs, these being the permanent allies against pests of all kinds. According to flocks of sheep, with high risk potential area (the presence of wild animals and other enemies of them) and other reasons, the population of Sheepdogs has been declining in many areas, however, remained constant in mountain areas, where the causes of forming this breed currently remain.

Data obtained from females that have calved indicates a good fertility of the canine population (6 to 8 pups at a birth), and the weight of the offspring from birth was  $0.285 \pm 0.018$  kg for males and  $0.233 \pm 0.054$  kg for females. So both sexes have a very similar body weight, males having a higher weight with only 52 grams. Living body weight determined by weighing the biological material indicates that this population has a good intensity of growth. If the average weight of males at 24 months is  $66.058 \pm 0.114$  kg, with over 25% of the average weight of females of the same age, and at older ages that 4 years males exceed 70 kg, and females have a higher average body weight of 50 kg.

The fact that the differences in weight are kept relatively constant both between the sexes and between different age groups allows us to conclude that this character is well consolidated and accurately expressed even in various conditions of maintenance, nutrition, work, effort, etc.

**Key words:** Shepherd dog, Romanian dog, Bucovina, sheep, shepherded

### INTRODUCTION

Since ancient times, man has always sought to develop some useful skills for dog to use for his life. So have emerged as objectives of the selection in the formation of some dog breeds, the development of skills for different activities, being the guard, hunting, fishing, surveillance, humanitarian and utilitarian.

Having as starting point the dogs' skills development, on the sidelines, and human needs or requirements on the other hand, were created nearly 400 canine breeds. Over a great span of time for training and job skills were the sole criterion for the selection of dogs. Aesthetic selection criteria were included in the plan to improve much later,

with the organization and holding of the first canine beauty exhibition.

Man has always sought to shape the dog character in its interest, and currently there are many breeds of dogs that have developed some features in order to achieve a specific utility. Such new races have appeared in addition to the quality of guard dog, hunting, companion, they can also be used to guard flocks of sheep or herd cattle.

So, the main objective of the formation of dog breeds has been the appearance of the utility and of the economy. As a method of training, most of the current populations of dogs were formed by the direct influence of natural factors, or the effect of reproductive isolation, a process which led to the formation of natural breeds, characterized by genetic uniformity, phenotypic and behavioral. This was also the way which was formed in the early part the Shepherd dogs population of Bucovina [1, 2, 4].

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## MATERIAL AND METHODS

Biological material subject to investigation was represented by the canine population belonging to the Bucovina Shepherd Dog breed, located in households and kennels in the area of training, meaning in Bucovina. Carrying out a comprehensive study on some elements that make the difference between the four types of Shepherd breeds of Romania is an activity that falls between modern concerns addressed in animal husbandry.

To assess the degree of bodily development were subject to control weightings various populations of dogs from the Bucovina Romanian Shepherd type, and weightings have been carried out by sex and age for the following landmarks: birth, at the time of weaning (50 days), at the age of 2 years and adults aged more than 3 years.

Intensity of growth has been analyzed on the basis of relative growth rate (Vr) of males and females in the Bucovina Shepherd Dog breed.

The achieved result have been input into the data base, used to run statistical analysis with the algorithm REML (REstricted Maximum Likelihood), which provide the achievements of the statistical parametric estimators within the normal range.

## RESULTS AND DISCUSSIONS

In Romania there are four breeds of cattle dogs (Carpathian Shepherd Dog, Bucovina Shepherd Dog, Mioritic Shepherd and Shepherd Raven), which have not conducted any studies on the behavior and the skills which they possess in relation to the main direction of the training, guarding and accompanying animal herds.

In order to achieve the general objective of the research analyzed the biological material was represented by canine populations belonging to the Romanian Shepherd of Bucovina in growing and use in private kennels, at farms, in households and in the yard lovers of this breed. In order to identify the morphological particularities, body weight and external developments, were investigated dogs belonging to all age categories and are scattered throughout the county of Suceava. In view of the fact that

one of the directions of research for the canine species is represented by the studies of the phylogeny and biodiversity, the dog being mammal species with the highest phenotypic variability, the proposed research are of great importance and have a pronounced scientific character, are of great novelty and real originality.

The area in which research were conducted is the forming area of this population of dogs. It is a historic area, known as Bucovina, which lies in the north-eastern part of Romania and is part of the administrative structures of the Suceava County. This geographical area is characterized by many activities carried out in the traditional way and in spite of the heterogeneous natural frame, and thus of the potential and habitat conditions, this represents a functional space kept relatively homogeneous, distinct from that of the rest of Moldavia, a mental space perceived as such by all local communities that cohabit in good understanding and harmony [3].

### **Exterior and body conformation for Romanian Shepherd Bucovina dog.**

Through its appearance on the outside through its qualities and the fact that it is a vigorous, calm, devoted dog, who loves children, this race has a lot of supporters. In the forming area, in recent times, and especially in the 1990<sup>s</sup>, interest in this population increased; a fact that has led to an intensification of further activities for the improvement and consolidation of the characteristic traits and character.

The main purpose of all these selection activities is the smoothing out characters and their characteristics in order to meet the requirements for recognition and final approval of the breed of Sheepdogs. On the basis of constant application and evaluation of breeding animals in exhibits, body type and format of the printed outer current populations has improved obviously. So, the present population has a harmonious exterior and a specific conformation to the cattle dog breeds, but you want a certain drawing and printing of color, typical or just characteristic to it (fig. 1).

In accordance with the plan of improvement and on the basis of respect for the selection work of all objects included in the

improvement program, has shown a positive evolution of the exterior and of the character of this breed and therefore was required to develop a new standard. Thus, in 2001 the Canine Association of Romanian has refreshed the breed standard. The current standard of 29.03.2002 and has been drawn up and updated in accordance with the model established by the General Assembly of the International Canine Federation, drafted, discussed and approved at Jerusalem in 1987, [1, 2].



Figure 1 Body size and overall harmony of the body and the type of desired color to the Bucovina Romanian Shepherd Dog breed (photo: original)

**Assessment of body weight.** Weight is an indicator of extreme importance in the scientific analysis of animal populations. In addition, each population is characteristic of a certain degree of development and consequently a certain body weight. From here we conclude that this parameter must not be missing from the presentation of their own species, breeds, varieties, or populations of animal lines.

To assess this indicator correctly, have been applied also measurements of the canine population of the breed; they are analyzed by sex and by age groups. After collection, centralization and processing statistics were obtained average values of the weights specific for the Bucovina Shepherd dog breed in relation to gender and age group.

**Live weight** is a highly relevant indicator and which is characteristic to breeds and populations of animals [4]. In order to characterize as many objectives of the breed of Bucovina Shepherd dogs, but also to determine the rhythm of body development

of the breed, were performed live weightings at different age periods.

**Weight at birth,** for dogs breeds, differ in relation to race, with the number of the calving, ability of breastfeeding of the mother, with the maintenance state of the female and not least by the way and manner in which the man is involved in the early postpartum periods.

From the moment of parturition and the first week of life, puppies must be kept under observation, to intervene so that each puppy to have access to the mammary gland. Restricting access, or lack of milk, has negative effects on the body development and organic resistance. To ensure that the work of the nest is good, but also to assess the state of health, rectal temperature verification is required.

After completing this critical stage normally the state of health and bodily development trends will be held within the limits of their respective specific biological population of dogs. Then, in order to assess body development is necessary for the application of a systematic control of live weight, conducted weekly during the first year of life.

Analysis of the way of growth of body weight at dogs was achieved starting from the calculation of individual growth rates, determined by the actual weight at different ages, this procedure allowing more extensive results. Related to this issue in 1991, Pilla A. [4] shows that by applying this process to reduce the random mistakes regarding the calculation of the weight, which often induces a significant variability of results related to weight. During the period of lactation maintenance of the puppies was done in nest boxes set up in kennels and in households where the parent females are bred. During the first 30 days basic nutrition was represented only by the mother's milk, and after this age the puppies were given extra cow and sheep milk, and other food groups.

On the basis of weighing in over 15 nests was determined live weight of puppies to 2 days after birth. If we look at the total puppies obtained from females that have calved, we found that their number has ranged between 6 and 12 puppies, which shows a good fertility for females of this

breed. Statistical processing of data shows that the birth weight of puppies is of  $0.285 \pm 0.018$  kg for males and  $0.233 \pm 0.054$  kg for

females. So both sexes have a very similar body weight, males having a higher weight with only 52 grams (table 1).

Table 1 Body development for Bucovina Romanian Shepherd Dog in relation to sex and age (n= 60)

Specification	Males (kg)				Females (kg)			
	$\bar{X} \pm s_{\bar{x}}$	V%	Limits		$\bar{X} \pm s_{\bar{x}}$	V%	Limits	
At birth	$0.285 \pm 0.018$	6.41	0.24	0.32	$0.233 \pm 0.054$	5.87	0.18	0.31
At weaning	$0.562 \pm 0.055$	11.5	0.39	0.71	$0.410 \pm 0.088$	14.3	0.37	0.51
At 2 years	$66.058 \pm 0.114$	13.2	54.5	69.7	$58.846 \pm 0.301$	15.6	38.9	50.5
At 3 years	$69.455 \pm 0.055$	18.4	55.7	73.8	$59.600 \pm 0.144$	15.3	40.5	52.3
At 4 years	$71.014 \pm 0.156$	18.5	55.5	70.5	$60.387 \pm 0.211$	16.1	49.8	60.1
At 5 years	$71.824 \pm 0.201$	15.8	64.4	72.8	$61.988 \pm 0.148$	13.3	52.5	63.5
At 6 years	$74.158 \pm 0.187$	13.7	68.8	77.5	$63.141 \pm 0.201$	12.5	55.4	68.7

**Weaning weight** is largely dependent of the diet applied to the mother-pup couples, but also of how the weaning is prepared, and the technique applied in suppressing breast milk. When the puppies reach the age of 6 weeks, sometimes even earlier, the female mother, which until that time showed total attachment towards their own offspring, starts by rarely visiting the nest, neglects them and reduces access to the glandular nipples. Will still return to the nest only 3-4 times a day, when the mammary glands are filled with milk. The number of dogs and their development no longer allows breastfeeding in decubitus position, often making the breastfeeding being made in a quadruped position (fig. 2).



Figure 2 The position adopted by the female parent to pup feeding at the end of lactation (original photo)

Studying the parameter represented by weight at the age when the first weaning takes

place, it was found that the difference between males and females grows to over 150 grams, a sign that the intensity of growth in males is more intense. If weaning is prepared through a graduate limitation of contact between mother and puppy and through the gradual administration of new resources of food, all puppies will overcome relatively easy the time of weaning, and by avoiding the turmoil of weaning is not affected the subsequent body development (Cesar's Way: the Puppy Development: Stage 3) [6].

**Body weight at 2 years** corresponds to the end of eclosing to youth period. From this point on, being attained sexual and body maturity, we can discuss about adult dogs. However, the period of time of weaning and the installation of full maturity, is extremely important and eventful.

The junior period of the puppies takes a little time and it would be a pity not to be properly prepared and used with all useful habits of new destinations or intended uses. It's a relatively difficult period, corresponding with the training of the dogs. The importance of this period derives from the fact that also knows the characteristics being complete, habits and skills that it will characterize at the adult age.

As a result of the determination of live weight belonging to the population of Bucovina Shepherd dogs is found insignificant statistical differences in terms of gender, and certain heterogeneity within these age groups (table 1). Taking into

account the fact that not all dogs benefit from the same conditions of maintenance, food and preparation; shows a certain variability and live weight but also behavior. Those which are not trained, not raised properly and are not present in the vicinity of ruminant herds show a slightly more aggressive behavior. That is why preparing the puppies for breeding and training for commercial purposes is extremely important.

Concerning the registered body weight at the age of 2 years shows an increase in variability both in males and in females, the average values being of 13.2% and respectively 15.6%. Body weight determined by weighing the biological material taken in the analysis, evaluation and research shows a greater increase in intensity in males compared to females. If the average weight

of males at 24 months is  $66.058 \pm 0.114$  kg, with over 25% of the average weight of females of the same age.

**Body weight at adult age** was assessed by weighing the females and males between the ages of 3 and 6 years. The figure 3 shows the evolution of body weight at adult dogs of Bucovina Shepherd breed, determined on the basis of live weight according to sex and age. Analyzing the data presented shows an increase in live weight more intense in males. In the case of males, if at the age of 2 years these had a higher average body weight by about 10.91%, at the age of 6 years the corporal weight was superior with just 15.05%. This difference is kept within close limits for the intermediate periods of analysis (fig. 3).

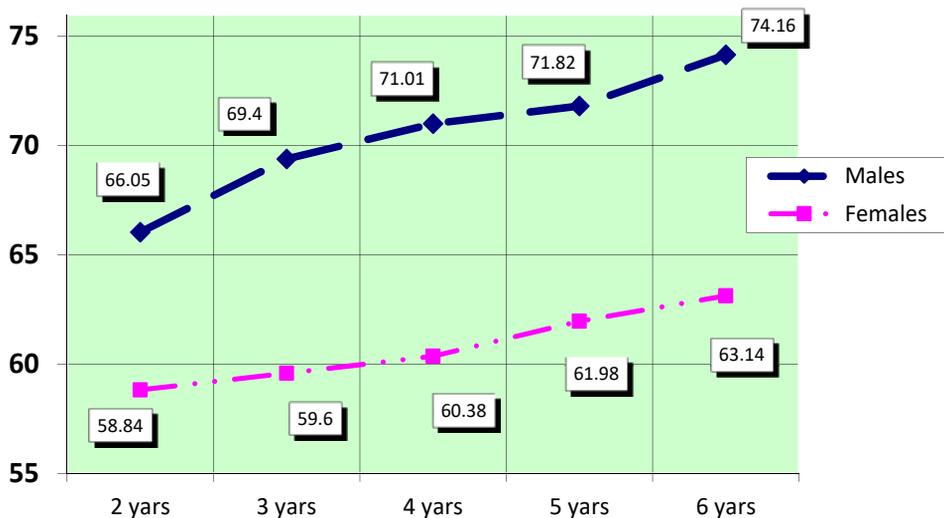


Fig. 3 Intensity of growth chart breed adult dogs Bucovina Romanian Shepherd Dogs, in relation to age and sex (kg)

The fact that the weight differences are kept relatively constant between the sexes and different age groups allows us to conclude that this character is well consolidated and accurately expressed even in different conditions of food, work, effort, etc. With the live weights recorded at different age periods it can be said that one of the conditions of approval as a new type of

breed, i.e. to have larger than 70 kg in males and with over 60 in females, is satisfied.

After the age of 4 years the average live weight was higher than 70 kg at males and more than 50 kg at females. All of these values denote that this dog has a very good body development, is strong and well structured. Also, give body weights determined are similar to those specific to breeds of sheepdogs.

**Intensity of growth** is an indicator used less often and offers clues on the extent of bodily development specific to certain age groups in relation to the media of the same parameter from the population of subjects. This indicator was analyzed on the basis of relative growth rate (Vr) of males and females in the Bucovina Shepherd dog breed.

Low values specific to the relative growth rate recorded after the age of 2 years indicates a low intensity for both sexes, but with the same meaning. Also, reduced values of the principal determined values for the intensity of growth of dogs of this breed, but after the age of 2 years, show a very good intensity and a certain precocity of the breed.

Table 2 The intensity of growth of Bucovina Romanian Shepherd Dog (%)

Age group	n	Growth intensity at males	Growth intensity for females
From 2 to 3 years	60	5.07	0.41
From 3 to 4 years	60	2.03	1.32
From 4 to 5 years	60	0.05	2.65
From 5 to 6 years	60	3.25	1.86

From the presentation of this data the conclusion which emerges is that the highest intensity of growth is registered in the period of youth, which is why, if we want to have normal adult and well develop, we must adhere a great attention to dogs which are in the process of growth.

**The ratio of stature and other bodily dimensions.** They had the role to be able to assess the harmony of body development and of the body format, but also the relationships that are established between various sizes specific to bodily sub-regions or regions. On the basis of measurements it was determined that the ratio between the structure and the main body dimensions, data presented in table 3.

Table 3 The main dimensions of height in relation to the size (n – 60)

Character	Total	Males	Females
Wither height (%)	100	100	100
Back height (%)	95.06	95.78	94.45
Height at rump (%)	96.83	97.58	96.27
Height at the tail (%)	89.12	89.78	88.75
Height at the hock joint (%)	29.16	30.54	29.41
Height at the elbow (%)	49.88	51.15	48.95

The resulting data highlights that at the respective dogs the body profile is rectangular, and the limbs are well developed. All of this information efficient us to affirm that this dog has a harmonious exterior, with a profile specific to breeds of

dogs body with medium-size, and the proper development of the limbs offers the possibility of a rapid movement.

## CONCLUSIONS

1. Statistical processing of the data shows that, at birth the weight of the puppies is of 0.285 kg at males and 0.233kg at females; so both sexes have a very similar live body weight, males having a higher weight with only 52 grams.

2. Studies relating to the parameter represented by weight at the age of 6.5 weeks, meaning at weaning, it was found that the difference between males and females grows to over 150 grams, a sign that the intensity of growth in males is more intense.

3. The variability of the weight recorded at the age of 2 years had averages of 13.2% at females and respectively 15.6% at males, the consequence of various growth conditions and household maintenance.

4. Males have an average weight 66.058 kg at 24 months, superior value with more than 25% from the same character recorded by females.

5. Intensity of growth is more intense at males, they having a higher average live body weight by about 10.91% at the age of 6 years from the one at 2 years.

6. Body profile characteristic to the analyzed dog population is rectangle with well-developed limbs and with a good ratio between body size, qualities which places this dog in the resistant group and with a very good movement speed.

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