

Comparison various body measurements of Aksaray Malakli and Kangal Dogs

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ABSTRACT

This study was conducted to compare and evaluate some body measurements of Kangal Dog and Aksaray Malakli Dog breeds. The study group consist of dogs with an age range from 2 to 5 years. Samples for Kangal dogs were obtained from Sivas and for Aksaray Malakli dogs from Aksaray province. Observations from ten dogs from both species (5 male and 5 female), in total 20 adult dogs were used for this study. Some of the morphological characteristics as black mask around the head, cream fur colour and holding spiral tail were found evident for Kangal dogs while in all Aksaray Malakli dogs the head and body size, thimbleful black mask around the head, and 6th nail existence were determined as descriptive differences between the genotypes. While the effect of gender on muzzle length, body index and bone index was not found to be significant, it was found significant for other body measurements. The rump lengths in male Aksaray Malakli dogs were significantly larger than male Kangal dogs ($P<0.001$). However, this trait was not significant for female dogs. This can be associated with the significant interaction between breed and gender ($P<0.01$). Body index also showed the same trend. Also, withers height and head circumference traits were found significant ($P<0.001$) for male and female Aksaray Malakli dogs and for male and female Kangal dogs ($P<0.01$). This can be a reason for the significant interaction between breed and gender. As a conclusion, although there are some phenotypic similarities between Kangal and Aksaray Malakli dogs, obtained body measurements showed significant differences. Furthermore, Aksaray Malakli dogs tend to have bigger body structure than Kangal dogs.

Keywords: Kangal Dog, Aksaray Malakli Dog, Turkish Shepherd Dog, body measurements

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Introduction

Genetic information of the last a hundred thousand years reveals that a large number of dog breeds with different behavioural traits and working purposes, which are morphologically and physiologically different, have been formed by genetic and

environmental factors. *The Federation Cynologique Internationale (FCI)* recognises 346 different dog, which are grouped in ten categories whose specific breed characteristics have been defined (Anonymous (b), 2018; Oğrak, 2009). However, it can be safely argued that the number of dog genotypes worldwide is much more than those recognized breeds.

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Dog Breeds and Cynology Federation of Turkey (KIF); the only full member of FCI from Turkey, describes the Kangal dogs as a separate breed. Besides, Kangal Dogs are officially recognized by FCI as the only Turkish dog breed since 15th June 2018. Kangal dogs are specific for Turkey and the recognisability of Kangal dogs has risen continuously due to their morphological and behavioural characteristics. Their success in the protection of livestock against attacks of wild animal, their loyalty towards their owners, their adaptability to the geography and local climate conditions increase Kangal dog's recognisability throughout the world. Kangal dogs have been taken to almost all continents of the world and they successfully adapted to the regions where they were taken. This dogs are mainly bred in order to protect the livestock against wild animal attacks. The breeders' associations/clubs related with Kangal dogs established in many countries, make important contributions to the recognition of this dog breed via their activities (Bruseke, 2003; Kocher, 2003; Marker, 2005; Reed, 2003; Anonymous (b), 2018).

It has been found that Kangal dogs do their herd guarding duties perfectly even against wild predators, thus the breeders can prevent animal losses without harming wildlife in various European countries, USA, Australia as well as some African countries (Marker, 2005).

Kangal dogs are reported to be loyal and affectionate to their owners, compassionate to their family but wary of strangers, stable against threats, brave and confident, at the same time naturally independent while on duty. Furthermore, they are characterised by black masks covering the muzzle on a dun to light grey coloured coat, medium size droopy ears, and when alert the tail is known to be curled over the back (Özcan et al., 2005; Oğrak, 2009).

Academic studies which focus on Kangal dogs in Turkey are becoming increasingly important since the early 1990s. Those studies often aim to reveal the relationship between morphological, physiological and behavioural traits and genetic structure of the dog.

A significant number of these academic studies collected information from Kangal dogs of different regions of Turkey and mostly from dog breeding farms (Atasoy et al., 2005; Daşkıran, 2007; Özbeyaz, 1994; Özcan and Altınel, 1997; Tepeli and Çetin, 2003). However, observations from Kangal dogs grown in Sivas region was so far limited.

KIF and FCI accept the height at the withers 72-78 ± 2 cm for male and 65-73 ± 2 cm for female dogs (Anonymous (b), 2018; Anonymous (c), 2018). Various

studies reported that the height at withers varies between 62.4-75.69 cm, the body length between 66.2-75.67 cm, the chest circumference between 18.51-23.20 cm, the chest width 23.87 cm, the front carpus circumference between 12.12-14.00 cm, the back carpus circumference 13.37 cm, the head length between 23.8-29.0 cm, the face length between 10.8-14.0 cm for Kangal dogs in a private dog breeding farm (Atasoy et al., 2005; Daşkıran, 2007; Özbeyaz, 1994; Özcan and Altınel, 1997; Tepeli and Çetin, 2000). Another study by Urosevic et al. (2012) reported the height at withers as varying between 72.54 and 68.60 cm, and body length between 82.11 and 78.50 cm for the 51 male and 34 female Kangal dogs, 85 in total, based on the observations coming from villages in Sivas.

Aksaray Malakli dogs are guarding dogs that is grown in the Aksaray province in the Central Anatolia Region. Although Aksaray Malakli dogs show similarities to the Kangal dogs, it is distinguished from Kangal dogs of Sivas origin with the higher body weights and the body size and it is considered as a different dog genotype. Although the origin of both dogs are from the same genetic pool, the crossbreeding and selection methods, which was done by the owners, considering the body size resulted in some similarities in terms of the morphological traits such as coat colour, spots on head and on body. However, Aksaray Malakli dogs are usually associated with higher live body weight, larger body and head structure, droopy lips, eye lid and cheek, strong muscular body and excessive aggression. As such, they did not qualify as a genotype in terms of long-term follow-up and protection of domestic herds. In order to determine the various traits for Aksaray Malakli dogs and to register this breed as a special breed for Aksaray, Aksaray governor's office, Aksaray municipality, some universities and Dog Breeds and Cynology Federation are cooperating (Aslım and Sinmez, 2017; Anonymous (a), 2018).

A study investigating Aksaray Malakli dogs reported the height at withers to vary between 78.36-72.98 cm, the rump height between 78.65-72.87 cm, the body length between 82.68-79.02 cm, the girth circumference between 89.89-84.47 cm, the front carpus circumference between 15.76-14.71 cm, leg length between 32.98-30.92 cm, face length between 12.55-11.80 cm for male and female dogs, respectively (Atasoy et al., 2014). In the same study, the breed characteristics of Aksaray Malakli dogs were reported as having a black mask, large forehead and body, drooping lips, large ears, short hairy and non-curved tail.

The present study was carried out to determine the body measurements and ratios of Kangal dogs in Sivas province and Aksaray Malakli dogs in Aksaray province, which were grown in different commercial animal breed farms and do not originate from a specific dog breeding farm, and also to compare these two breeds/genotypes.



Figure 1. Kangal dog (a) and Aksaray Malakli dog (b).

Materials and methods

The material of this study was formed by 10 dogs from each breed (5 male, 5 female), 20 adult dogs in total. Kangal dogs were from Sivas and Aksaray Malakli dogs were from Aksaray, both breeds were obtained from the villages and not from the commercial dog breeding farms.

In order to determine and compare the body measurements of dogs, 12 different parameters were measured. The wither height, rump height and body length measurements were obtained using a measuring stick, the chest girth, front carpus circumference, head length, head circumference, muzzle length and muzzle circumference measurements were obtained using a tape measure. General views of dogs were evaluated and recorded.

The measurement localizations described below (Drobnjak et al., 2010; Oğrak et al., 2014):

Wither height: The distance between ground to the highest point of wither (cm),

Rump Height: The distance between ground to the highest point of sacrum (cm),

Body length: The distance between Caput humeri and ischii (cm),

Chest girth: Measurement from the back of the scapula perpendicular to the body axis all the way around costa (cm),

Front carpus circumference: Perimeter from the narrowest point of Metacarpus (cm),

Head length: The distance between Crista occipitalis and end of the incisivum (cm),

Head circumference: The circumference from the widest part of right and left arcus zygomaticus (cm),

Muzzle (Face) Length: The distance between tip of the nose and eye's base (cm),



Figure 2. Head of Kangal dog (a) and head of Aksaray Malakli dog (b).

Muzzle Circumference: The circumference of the nose below the eyes (cm).

The body index values obtained by using the averages of the measurements and the formulas used in the calculation given below (Oğrak et al., 2014):

Body Index: Body length / Withers Height x 100 (%)

Massiveness Index: Chest girth / Withers Height x 100 (%)

Bone Index: Front carpus circumference / Withers height x 100 (%)

The least squares mean of the data which was obtained from measurements of the dogs, the effect of breed and gender and their interactions on these variables were analyzed by GLM procedure using SPSS (IBM SPSS Statistics, Version 23.00 IBM Corporation, USA) package program.

the two-way interaction had significant effect on body index, while sex had an effect on massiveness index (P<0.05).

Discussion

When the measured parameters in the study are evaluated, Aksaray Malakli dogs appear to have a significantly larger body conformation compared to Kangal dogs. Even though the morphological breed/genotype definitions were similar, having a larger body conformation can be considered as an important differentiation point. As the body size in dogs can be evaluated as a criterion in the definition of breed/

Table 1. Some body measurements of Kangal Dog and Aksaray Malakli Dog.

Traits	Genotype		Gender		SEM	Significance		
	Kangal Dog	Aksaray Malakli Dog	Female	Male		Genotype	Gender	Genotype X Gender
Withers Height	70.75	80.75	71.40	80.10	0.479	***	***	**
Rump Height	71.85	78.50	71.45	78.90	0.598	***	***	**
Body Length	82.90	99.60	87.10	95.40	1.090	***	***	N.S
Girth Circumference	94.00	104.20	96.40	101.80	0.862	***	**	N.S
Frontal corpus circumference	17.30	19.00	16.90	19.40	0.180	***	***	N.S
Head Length	32.80	35.20	31.50	36.50	0.468	*	***	N.S
Head Circumference	55.70	65.90	59.50	65.10	0.549	***	***	*
Muzzle Length	13.00	15.40	13.90	14.50	0.255	***	N.S	N.S
Muzzle Circumference	30.30	41.60	34.60	37.30	0.411	***	**	N.S
Body Index	117.14	123.63	121.71	119.06	1.181	*	N.S	*
Massiveness Index	132.95	129.63	135.13	127.44	1.348	N.S	*	N.S
Bone Index	22.45	23.53	23.68	24.29	0.230	N.S	N.S	N.S

*P<0.05, **P<0.01, ***P<0.001, N.S. : Non significant.

Results

Means of various body measurements of Kangal dogs and Aksaray Malakli dogs and the effects of genotype and sex on these parameters were given in Table 1.

The effect of genotype on body measurements were found significant for Aksaray Malakli dogs. On the other hand, the effect of sex was found significant for male dogs except muzzle length. When the effect of genotype x sex interaction on various body measurements were investigated, its effect on withers height, rump height and head circumference were found to be significant. Various body measurements were used in calculation of body, massiveness and bone index values. In addition to this, genotype and

genotype, as time passes, it may lead to differentiation in the behaviour and sense of duty of these dogs. Pinscher breeds can be an example to this situation, with common features in terms of morphological parameters (bristle length, post colour, marks, etc.). Miniature Pinscher and Doberman Pinscher are accepted as two different breeds based on body size, and duty and behaviour differences (Anonymous (b), 2018). Miniature Pinscher is defined as belonging to "Toy Groups" while Doberman Pinscher belongs to "Working Groups" amongst the dog breeds (Anonymous (d), 2018; Anonymous (e), 2018). A similar differentiation and identification can also be made for Aksaray Malakli dogs and Kangal dogs.

When the obtained body measurements of the Kangal dogs were compared with the values obtained from other studies, it was observed that there were similarities between Kangal dogs of this study and Kangal dogs from villages and dog breeding farms in Sivas in terms of the body measurements (Uroseviç et al., 2012; Daşkıran 2007). However, even though the withers height was found to be similar for Kangal dogs from this study and Kangal dogs from other regions, the values for the dogs from other regions was higher for body length, chest structure, carpus width and especially the head traits (Atasoy et al., 2005; Özbeyaz, 1994; Özcan and Altınel, 1997; Tepeli and Çetin, 2000).

These results imply that there might be regional differences in terms of the body size, possibly related with the different adaptation, management nutrition and utility traits of the dogs, also due to the differences between dog owners' preferences in crossbreeding and selection criteria. Although Kangal dogs that are bred in different regions have same and/or similar origin, changes in selection criteria and inbreeding options might be the reason of the differences obtained in this study. The differences in head traits may also show that Kangal dogs from other regions have the tendency of disintegration from their genetic codes. The withers height reported by KIF (or FCI) was higher than the values obtained in this study. The higher withers height as was reported by KIF in order to define the Kangal breed could be related with the quality of the material. KIF evaluated the Kangal dogs from Sivas and Ankara provinces of Turkey in order to identify breed standards for Kangal dogs having common morphological traits.

The measurement results of Aksaray Malakli dogs were found higher than those by Atasoy et al. (2014). Limited number of dogs included in that study and the material of Aksaray Malakli dogs, which were the popular dogs of well-known people may have led to these differences. Only the effect of breed on body

index score was found significant among all indexes, and this might be explained by the limited number of observations.

The higher mean scores of the body and bone index of Aksaray Malakli dogs shows that the shape is closer to a rectangle and bone and/or skeleton structure is proportionally heavier. However, in terms of the massiveness index, which points out the chest capacity, the higher values of Kangal dogs were in contrast with other body measurement and ratios. The fact that Kangal dogs are always used for herding purposes while Aksaray Malakli dogs are used for guarding purposes due to their massive and bulky bodies could explain this.

Conclusions

In conclusion, it was observed that Aksaray Malakli dogs, which have similarities to Kangal dogs in terms of the morphological traits, have more massive body structure than Kangals. The body index scores and the assumption of limited movement ability and durability of Aksaray Malakli dogs is related to the different utility purposes and behavioural traits of these dogs.

Detecting different traits of Aksaray Malakli dogs is important in terms of defining Aksaray Malakli as a different breed. In future, it will be useful to study the different aspects of dogs via new comparative studies, to investigate the genetic structure and disposition of the dogs, to determine the breed standards properly in terms of the official formations, to reveal the breed specific selection and pedigree breeding models, and to determine and describe Turkish dog breeds and protecting local genetic sources.

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References

- Anonymous (a). (2018). Retrieved from: http://www.aksaraykulturturizm.com/tr/haberler-duyurular/aksaray-malaklisi-irk-tespit-olcum-calismasi-yapildi_15-05-2016
- Anonymous (b). (2018). Retrieved from: <http://www.fci.be/en/Nomenclature/>
- Anonymous (c) (2018). Kangal çoban köpeği. Retrieved from: <http://www.kif.org.tr/yerli-irklar/kangal.html>
- Anonymous (d). (2018). Doberman-pinschers.

- Retrieved from: <https://www.akc.org/dog-breeds/doberman-pinscher/>
- Anonymous (e) (2018). Miniature-pinschers. Retrieved from: <https://www.akc.org/dog-breeds/miniature-pinscher/>
- Aslım, G., & Sinmez, Ç. Ç. (2017). Aksaray ili folklorunda Aksaray Malaklısı yetiştiriciliği. *Eurasian Journal of Veterinary Sciences*, 33(3), 148-157.
- Atasoy, F., Ünal, N., Kanlı, O., & Yakan, A. (2005). Damızlık Kangal köpeklerinde canlı ağırlık ve bazı vücut ölçüleri. *Lalahan Hayvancılık Araştırma Enstitüsü Dergisi*, 45(1), 25-29.

- Atasoy, F., Erdoğan, M., Özarlan, B., Yüceer, B., Kocakaya, A., & Akçapınar, H. (2014). Malakli Karabaş köpeklerde bazı morfolojik ve genetik özellikler, Ankara Üniversitesi Veteriner Fakültesi Dergisi, 61, 125-132.
- Bruseke, W. (2003, July 8). *The situation of the Kangal Dog in Germany*. Paper presented at the 1. International Kangal Dog Symposium, Sivas, Turkey.
- Drobnjak, D., Matić, V., Miliyević, D., (2010). *Eksterijer pasa osnove procene*, Beograd, Serbia:Tipa Štampa.
- Daşkıran, İ. (2007). Body weight and some morphological characteristics of Kangal dogs. *Journal of Animal and Veterinary Advances*, 6(3), 368-370.
- Kocher, S. (2003, July 8). *Stewardship of the Kangal Dog Breed: Problems and progress*. Paper presented at the 1. International Kangal Dog Symposium. Sivas, Turkey.
- Marker, L. L. (2005, July 8). *Evaluating the effectiveness of livestock guarding dogs as a method of conflict resolution*. Paper presented at the 2nd International Kangal Dog Symposium. Sivas, Turkey.
- Oğrak, Y. Z. (2009). Kangal köpeği ve yetiştiriciliği. *Uzunyayla Dergisi*, 1(1), 13-16.
- Oğrak, Y. Z., Yoldaş, A., Urošević, M., & Drobnjak, D. (2014). Some morphological traits of Tarsus Çatalburun breed of Turkish hunting dog. *Eurasian Journal of Veterinary Sciences*, 1, 25-29.
- Özbeyaz, C., (1994). Kangal köpeklerinde bazı morfolojik özellikler. *Lalahan Hayvancılık Araştırma Enstitüsü Dergisi*, 34(1-2), 38-46.
- Özcan, M., & Altınel, A. (1997). Kangal köpeği ve Alman çoban köpeği ırklarının bazı morfolojik özellikleri. *İstanbul Üniversitesi Veteriner Fakültesi Dergisi*, 23 (2), 413-422.
- Özcan, M., Yılmaz, A., & Oğrak, Y. Z. (2005, July 8). *The breed standart of Kangal Dog*. Paper presented at the 2nd International Kangal Dog Symposium. Sivas, Turkey.
- Reed, S., (2003, July 8). *Turkish Dogs in U.K. & Europe*. Paper presented at the 1. International Kangal Dog Symposium. Sivas, Turkey.
- Tepeli, C., & Çetin, O. (2000). Kangal ırkı Türk Çoban Köpeklerinde büyüme, bazı vücut ölçüleri ve döl verimi özelliklerinin belirlenmesi. 1. Büyüme ve bazı vücut ölçüleri. *Veteriner.Bilimleri Dergisi*, 16(1), 5-16.
- Tepeli, C., Çetin, O. (2003, July 8). *A Study on head measurements of Kangal and Akbaş Turkish Shepherd Dogs*. Paper presented at the 1. International Kangal Dog Symposium. Sivas, Turkey.
- Urošević, M., Drobnjak, D., & Oğrak Y. (2012). Body format of the Kangal Turkish shepherd dog. *Agro-knowledge journal*, 13(2), 209-216.