

Submitted: 22/02/2017

Accepted: 31/05/2017

Published: 13/06/2017

## Longevity of Cane Corso Italiano dog breed and its relationship with hair colour

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### Abstract

The Cane Corso Italiano belongs among the new dog breeds that were fully recognised by Federation Cynologique Internationale (FCI) in 2007. For the first time, this study describes a median lifespan using the data of 232 dogs of the Cane Corso Italiano breed collected from kennels and individual owners from 25 countries. The median lifespan of the whole examined group is 9.29 years (IQR 6.98-11.12, IQR = Interquartile Range). This paper is the first to describe the possible relationship between median lifespan and hair colour within one breed. The longest living group is formed by black brindle coloured dogs, with a median of 10.30 years (IQR 8.33-13.00), and brindle coloured dogs, with a median of 10.13 years (IQR 7.12-11.25). The median lifespan of black brindle dogs exceeded the overall median lifespan of all dogs by 1.01 year and the median lifespan of other colour dogs by 2.21 years. Our results suggest a possible way for a prolongation of age at death of the Cane Corso Italiano breed using appropriate breeding. The median lifespan of male Cane Corso Italiano dogs is 9.25 years (IQR 6.97-11.00) and female Cane Corso Italiano dogs 9.33 years (IQR 7.00-11.31). The statistical analysis using the Independent Samples Student's *t* test confirmed that the lifespan of female dogs did not exceed the median lifespan of male dogs ( $P > 0.01$ ).

**Keywords:** Cane Corso Italiano, Dog Breed, Kennel, Life Prolongation, Lifespan.

### Introduction

The lifespan of most dog breeds has been described in the past (Adams *et al.*, 2010; O'Neill *et al.*, 2013). The most frequent causes of death, such as cancer, cardiac and urologic diseases and many others, have been described using statistical methods (Bonnert *et al.*, 2005; Fleming *et al.*, 2011). Young dogs commonly died from gastrointestinal and infectious causes whereas older dogs died of neurological and neoplastic causes (Fleming *et al.*, 2011).

The median age at death described in the study of Adams *et al.* (2010), containing data on 15881 dogs (more than 150 breeds), was 11 years and 3 months (minimum 2 months, maximum 23 years and 5 months). The median age at death was significantly higher in small breeds (13.50-15.56) compared to large or giant breeds (3.83-7.46) (Adams *et al.*, 2010).

The fact that smaller breeds, such as the Terrier, Beagle, Bearded Collie, Bichon Frise, Dachshund, Miniature Pinscher, Miniature Poodle, Toy Poodle and Whippet, lived longer and giant breeds, such as the Leonberger, Mastiff, Bloodhound, Irish Wolfhound, Deerhound and Bernese Mountain Dog, had a shorter lifespan has been confirmed in more studies (Bronson, 1982; Michell, 1999; Proschowsky *et al.*, 2003; O'Neill *et al.*, 2013).

A negative correlation has been observed between height and longevity and between weight and longevity (Greer *et al.*, 2007). Longevity in crossbred dogs

exceeded purebred dogs by 1.20 years (O'Neill *et al.*, 2013). Lifelong maintenance of lean body mass and attenuated accumulation of body fat were key factors in achieving an exceptional lifespan in Labrador Retrievers (Adams *et al.*, 2016).

Comparison of longevity in dogs seen at primary care practices with dogs seen at veterinary teaching hospitals showed a completely different age at death by the same breed (Waters, 2014). In this article, Waters predicts that there is a lot of room for innovation in canine longevity research. Female Rottweiler dogs tend to achieve an exceptional longevity more than males. Removal of ovaries during the first 4 years of life erased the female survival advantage (Waters *et al.*, 2009).

The Cane Corso Italiano (Fig. 1) belongs to the new dog breeds fully recognized by FCI (Federation Cynologique Internationale) in 2007. The lifespan data of this breed have so far not been described using a well-defined study.

The objective of this study is to describe the lifespan of the Cane Corso Italiano. The colour of the Cane Corso Italiano may differ (black, black brindle, brindle, fawn, grey, grey brindle and others). The study also focuses on the relationship between lifespan and hair colour.

### Materials and Methods

#### Data collection

More than 600 randomly chosen kennels and owners of the Cane Corso Italiano breed from all over the world were asked to fill in a questionnaire containing

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identifying such as name, sex, hair colour, age at death, cause of death. Data collected with stated cause of death as “poisoning” or “accident” were excluded from this study.

We obtained data on 232 deceased dogs from 73 kennels and individual owners from 25 countries (Australia, Belgium, Bosnia and Herzegovina, Bulgaria, Canada, Czech Republic, Estonia, France, Germany, Greece, Hungary, Israel, Italy, Latvia, Macedonia, Montenegro, Netherlands, Poland, Russia, Serbia, Slovenia, Spain, Turkey, Ukraine, USA).



**Fig. 1.** Photograph of a Cane Corso Italiano dog (Koleta Atison, Evžen Korec’s archive).

### Statistical methods

Overall and colour-specific lifespan was reported using median, interquartile range (IQR), range and Analysis of variance (Iversen and Norpoth, 1987). Male and female lifespan was compared using the Independent Samples Student’s t test (Rice, 2006). Normality of distribution was tested by the Shapiro-Wilk test (Shapiro and Wilk, 1965).

### Results and Discussion

The collective sample of deceased dogs includes 114 (50.22 %) male and 113 (49.78 %) female Cane Corso Italiano dogs, 62 (26.72 %) were black dogs, 38 (16.38 %) brindle dogs, 35 (15.08 %) black brindle dogs, 27 (11.64 %) fawn dogs, 26 (11.21 %) grey brindle dogs, 31 (13.36 %) grey dogs and 13 (5.60 %) other colour dogs.

The median lifespan and colour-specific median lifespan are summarized in Table 1. The overall (including all hair colour varieties) median lifespan is 9.29 years (IQR 6.98-11.12).

The longest living group is formed by black brindle coloured dogs with a median of 10.30 years (IQR 8.33-13.00) and brindle coloured dogs with a median of 10.13 years (IQR 7.12-11.25). The shortest living group is other coloured dogs with a median of 8.09 years (IQR 5.46-9.16).

The data on female and male median lifespan are summarized in Table 2.

**Table 1.** Lifespan of different hair colour dogs of the Cane Corso Italiano breed.

Colour	Median	IQR	Range	Dogs (n)	% of total
Black brindle	10.30	8.33-13.00	0.75-16.00	35	15.10
Brindle	10.13	7.12-11.25	1.59-14.00	38	16.40
Grey Brindle	9.84	7.00-11.41	3.60-14.83	26	11.20
Fawn	9.01	7.73-11.24	2.59-18.00	27	11.60
Black	9.00	6.14-11.00	0.42-14.00	62	26.70
Grey	9.00	5.80-10.28	0.52-17.00	31	13.40
Other	8.09	5.46-9.16	0.50-11.00	13	5.60
All dogs	9.29	6.98-11.12	0.42-18.00	232	100.00

(Median): Median age at death (years); (IQR): Interquartile range; (n): number of dogs in the colour-specific group.

**Table 2.** Lifespan of female and male dogs of the Cane Corso Italiano breed.

Sex	Median	IQR	Range	Dogs (n)	% of total
Female	9.33	7.00-11.31	0.42-16.00	113	50.22
Male	9.25	6.97-11.00	0.50-18.00	114	49.78

(Median): Median age at death (years); (IQR): Interquartile range; (n): number of dogs in the colour-specific group.

The median lifespan of male dogs is 9.25 years (IQR 6.97-11.00) and female dogs 9.33 years (IQR 7.00-11.31). The statistical analysis using the Independent Samples T-test confirmed that lifespan of females did not exceed lifespan of males ( $P>0.01$ ). Statistical analysis using the Shapiro-Wilk test confirmed that the distributions in Fig. 2 are normal ( $P>0.01$ ).

Distribution patterns for age at death, interquartile range, range and median of all colour-determined groups are displayed in Fig. 2. Median age at death has been described for many dog breeds (Bronson, 1982; Proschowsky *et al.*, 2003; Adams *et al.*, 2010; O’Neill *et al.*, 2013). The median lifespan of Cane Corso Italiano has so far not been determined using a well-defined study. For the first time, we described the median lifespan of the Cane Corso Italiano breed, which is 9.29 years. Comparing the median lifespan of other molossian type breeds (Hovawart: 12.92, Tibetan Mastiff: 11.92, Boxer: 10.25, Newfoundland: 9.67, Pyrenean Mountain Dog: 9.58, Bullmastiff: 7.46, Leonberger: 7.08, Bernard: 7.00, Mastiff: 6.83, Great Dane: 6.50, Bulldog: 6.29, Shar Pei: 6.29, Dogue de Bordeaux: 3.83, Neapolitan mastiff: 2.33) (Adams *et al.*, 2010; O’Neill *et al.*, 2013), the Cane Corso Italiano belongs to breeds with a higher median age at death (overall median: 9.29, median of black brindle coloured dogs: 10.30).

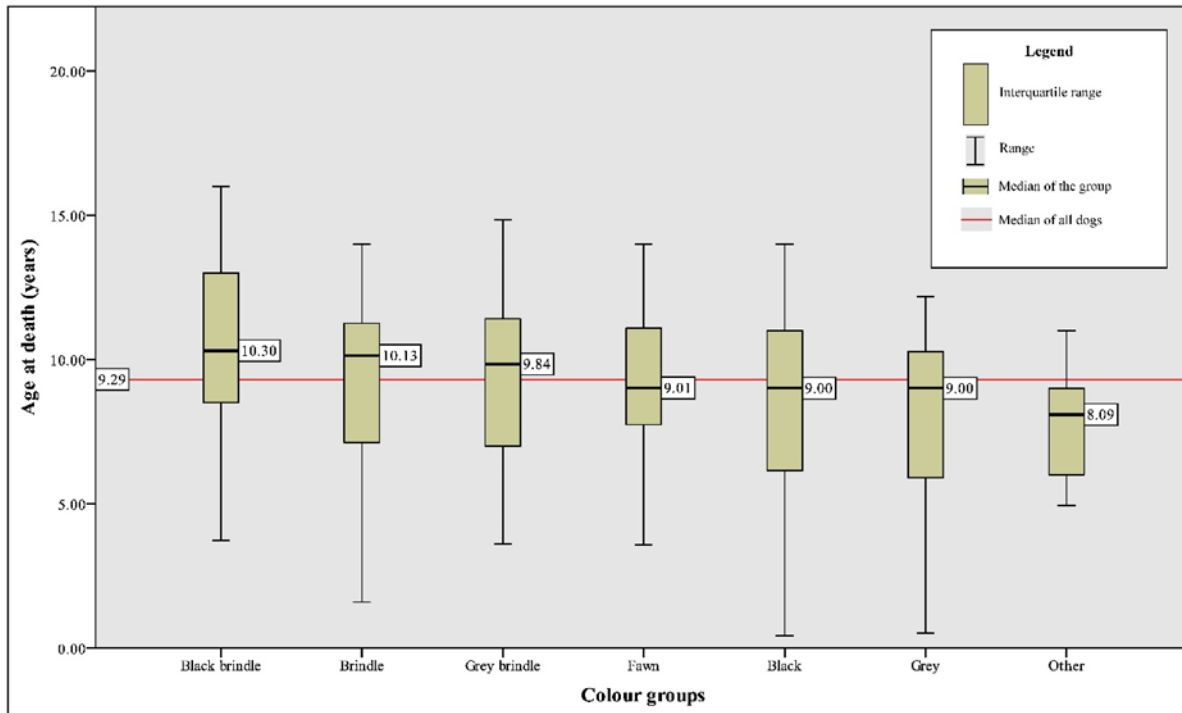


Fig. 2. Distribution pattern for age at death (years), IQR, range and median, n = 232.

The possible relationship between median lifespan and hair colour within one breed has so far not been examined.

This paper describes the relationship between median lifespan and hair colour. The median age at death of the examined group of Cane Corso Italiano breed dogs is 9.29 years. The median lifespan of black brindle coloured dogs (10.30 years) exceeded the overall median lifespan by 1.01 year. The median lifespan of brindle dogs (10.13 years) and grey brindle dogs (9.84 years) also exceeded the overall median lifespan (9.29 years). This fact may suggest a relationship between brindle status (black brindle, brindle, grey brindle) and longevity. Examining this relationship will be the aim of our future study. Breeding programs should aim to reduce the prevalence of inherited disorders (Guandalini *et al.*, 2016) and maximize the life prolongation.

Our results suggest a possible way to prolong age at death of the Cane Corso Italiano breed using appropriate breeding.

#### Acknowledgements

We wish to thank all the kennels and individual owners who provided us with the data for statistical analysis.

#### Conflict of interest

The authors declare that there is no conflict of interests.

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