



## UK Brachycephalic Working Group

<http://www.ukbwg.org.uk/>

Noisy breathing in brachycephalic (flat-faced) dogs at rest or light exercise is never normal  
*November 6th, 2024*

### Position of the UK Brachycephalic Working Group (BWG)

The UK Brachycephalic Working Group (BWG) considers that brachycephalic (flat faced) dogs with noisy breathing (awake-snoring or raspy breathing) at rest or light exercise are suffering from severe respiratory disease (brachycephalic obstructive airway syndrome - BOAS) and should never be considered as normal or healthy. Flat-faced dogs with noisy breathing at rest or light exercise are suffering and should not be described as healthy dogs if promoted, bred from, sold, shown or rehomed.

### Wider public message:

Noisy breathing (awake-snoring or raspy breathing) in brachycephalic (flat-faced) dogs at rest or light exercise is never normal or healthy.

- People aiming to get a healthy dog are encouraged never to acquire a brachycephalic (flat-faced) dog with noisy breathing.
- People already owning a brachycephalic (flat-faced) dog with noisy breathing are encouraged to never breed from that dog.
- People already owning a brachycephalic (flat-faced) dog with noisy breathing are encouraged to never promote that dog as healthy.
- People who already own a brachycephalic (flat-faced) dog with noisy or laboured breathing at rest or light exercise should:
  - Never consider noisy breathing at rest or light exercise as normal or healthy.
  - Be aware that breathing problems in flat-faced dogs generally worsen with age
  - Always keep your flat-faced dog slim.
  - Arrange at-least annual veterinary health examinations as advised by your veterinary surgery.
  - Ask your vet about using the Respiratory Function Grading Scheme to test the severity of your dog's breathing problems.
  - Exercise your flat-faced dog with breathing problems with caution.
  - Being flat-faced predisposes dogs to heatstroke. To avoid heatstroke, keep your dog cool on warm/hot days and remember that exercise is the most common trigger for heatstroke.

## Detailed Background

Wild dogs have evolved over millions of years to enjoy freedom to breathe, sleep and exercise naturally without restriction from obstructed respiratory passages. Sadly, many humans now accept severe respiratory compromise as being 'normal' for dogs within breeds with a flat face conformation (brachycephaly) and fail to recognise the lifetime of suffering that affected dogs endure. The position of the UK Brachycephalic Working Group is that dogs with brachycephaly that show noisy breathing (awake-snoring or raspy breathing) at rest or light exercise are suffering from severe respiratory problems (brachycephalic obstructive airway syndrome - BOAS) and should never be considered as normal or healthy. Flat-faced dogs with noisy breathing at rest or light exercise are suffering and should not be described as healthy dogs if promoted, bred from, sold, shown or rehomed.

Brachycephaly in dogs can be defined by a high cephalic index i.e. a high ratio of the width of the skull to the length of the skull. The skulls of dogs with brachycephaly show a substantial shortening of the premaxillary and maxillary bones (muzzle), the skull base and often also widening of the skull. The nasal conchae (cartilage scrolls) are frequently mispositioned and thickened and result in restricted high pressure nasal airflow (Hostnik *et al.* 2017; Oshita *et al.* 2022).

Over recent centuries, humankind has selected certain types of dogs towards more and more extreme brachycephaly (being flat-faced). This has led to increasing deformation of the upper airway tract because the soft tissues within the nose and pharynx did not proportionately reduce with the shortening of the skull. These deformations combine to cause varying degrees of obstruction to airflow as it enters the nares (nostrils) before finally getting down to the lung alveoli and then back out again (Liu *et al.* 2017). Brachycephalic obstructive airway syndrome (BOAS) is the term used to describe conformation-related respiratory problems that results from these deformations (Liu *et al.* 2015). The specific anatomical deformities that can combine to produce BOAS include narrowed nostrils, excessive nasal tissue, nasopharyngeal compression, macroglossia, hyperplastic soft palate and hypoplastic trachea (Ladlow 2021).

Secondary issues that result from excessive respiratory effort can worsen the initial BOAS over time. These include laryngeal collapse, bronchial collapse, pulmonary hypertension along with a range of gastrointestinal effects that can lead to aspiration pneumonia (Poncet *et al.* 2005).

Key breeds that are commonly affected by BOAS include French Bulldogs (~50% affected), Pugs (~60% affected) and English Bulldogs (~40% affected) (Liu *et al.* 2016).

For anyone concerned about noisy breathing in their dog, the Kennel Club and University of Cambridge 'Respiratory Function Grading Scheme' (RFGS) offers a non-invasive assessment tool (The Kennel Club 2024). The RFGS enables veterinary surgeons to assess the adequacy of respiratory function in English Bulldogs, French Bulldogs and Pugs and to detect BOAS. Dogs that show clinical evidence of impaired respiratory function after having been exercised for 3 minutes at a fast walk or faster are considered to have clinical BOAS at this point and are progressively scored from Grade 2 (moderate BOAS) to Grade 3 (severe BOAS).

## Key message

Brachycephalic dogs with noisy breathing (awake-snoring or raspy breathing) at rest or light exercise are suffering from severe respiratory problems (BOAS) and should never be considered as normal or healthy. Flat-faced dogs with noisy breathing at rest or light exercise are suffering and should not be described as healthy dogs if promoted, bred from, sold, shown or rehomed.

## References

- LADLOW, J. 2021. Brachycephalic obstructive airway syndrome: guide to the respiratory functional grading scheme. *In Practice*, 43, 548-555.
- LIU, N.-C., SARGAN, D. R., ADAMS, V. J. & LADLOW, J. F. 2015. Characterisation of Brachycephalic Obstructive Airway Syndrome in French Bulldogs Using Whole-Body Barometric Plethysmography. *PLOS ONE*, 10, e0130741.
- LIU, N.-C., TROCONIS, E. L., KALMAR, L., PRICE, D. J., WRIGHT, H. E., ADAMS, V. J., SARGAN, D. R. & LADLOW, J. F. 2017. Conformational risk factors of brachycephalic obstructive airway syndrome (BOAS) in pugs, French bulldogs, and bulldogs. *PLOS ONE*, 12, e0181928.
- PONCET, C. M., DUPRE, G. P., FREICHE, V. G., ESTRADA, M. M., POUBANNE, Y. A. & BOUVY, B. M. 2005. Prevalence of gastrointestinal tract lesions in 73 brachycephalic dogs with upper respiratory syndrome. *Journal of Small Animal Practice*, 46, 273-279.
- Hostnik, E.T., Scansen, B.A., Zielinski, R. and Ghadiali, S.N. (2017) 'Quantification of nasal airflow resistance in English bulldogs using computed tomography and computational fluid dynamics', *Veterinary Radiology & Ultrasound*, 58(5), 542-551, available: <http://dx.doi.org/10.1111/vru.12531>.
- Ladlow, J. (2021) 'Brachycephalic obstructive airway syndrome: guide to the respiratory functional grading scheme', *In Practice*, 43(10), 548-555, available: <http://dx.doi.org/https://doi.org/10.1002/inpr.149>.
- Liu, N.-C., Adams, V.J., Kalmar, L., Ladlow, J.F. and Sargan, D.R. (2016) 'Whole-Body Barometric Plethysmography Characterizes Upper Airway Obstruction in 3 Brachycephalic Breeds of Dogs', *Journal of Veterinary Internal Medicine*, 30(3), 853-865, available: <http://dx.doi.org/10.1111/jvim.13933>.
- Liu, N.-C., Sargan, D.R., Adams, V.J. and Ladlow, J.F. (2015) 'Characterisation of Brachycephalic Obstructive Airway Syndrome in French Bulldogs Using Whole-Body Barometric Plethysmography', *PLoS One*, 10(6), e0130741, available: <http://dx.doi.org/10.1371/journal.pone.0130741>.
- Liu, N.-C., Troconis, E.L., Kalmar, L., Price, D.J., Wright, H.E., Adams, V.J., Sargan, D.R. and Ladlow, J.F. (2017) 'Conformational risk factors of brachycephalic obstructive airway syndrome (BOAS) in pugs, French bulldogs, and bulldogs', *PLoS One*, 12(8), e0181928, available: <http://dx.doi.org/10.1371/journal.pone.0181928>.
- Oshita, R., Katayose, S., Kanai, E. and Takagi, S. (2022) 'Assessment of Nasal Structure Using CT Imaging of Brachycephalic Dog Breeds', *Animals*, 12(13), 1636.

Poncet, C.M., Dupre, G.P., Freiche, V.G., Estrada, M.M., Poubanne, Y.A. and Bouvy, B.M. (2005) 'Prevalence of gastrointestinal tract lesions in 73 brachycephalic dogs with upper respiratory syndrome', *Journal of Small Animal Practice*, 46(6), 273-279, available: <http://dx.doi.org/10.1111/j.1748-5827.2005.tb00320.x>.

The Kennel Club (2024) *The Kennel Club and University of Cambridge Respiratory Function Grading Scheme*, available: <https://www.thekennelclub.org.uk/health-and-dog-care/health/getting-started-with-health-testing-and-screening/respiratory-function-grading-scheme/> [accessed 2 September].