Assessment of welfare and brachycephalic obstructive airway syndrome signs in young, breeding age French Bulldogs and Pugs, using owner questionnaire, physical examination and walk tests

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Abstract

Brachycephalic obstructive airway syndrome (BOAS) is a major welfare problem in short-nosed breeds, such as the French Bulldog and Pug. In addition to respiratory difficulties, exercise intolerance and impaired recovery are major signs of BOAS. To select healthier breeding animals, exercise tolerance tests, such as the 1,000-m walk test, are already used in several countries for brachycephalic dogs, although evidence supporting their use is still scarce. The aims of this study were to assess the daily welfare of young, breeding-age French Bulldogs (n = 44) and Pugs (n = 51) using an owner questionnaire, and to evaluate 6-min walk test (6MWT) and 1,000-m walk test usability for differentiation between non- or mildly BOAS-affected dogs and more severely affected dogs. Only four out of 95 French Bulldog and Pug owners reported that the BOAS signs limited the daily activities of their dogs. However, according to the physical, examination-based veterinary BOAS grading, 31/95 of the dogs had moderate to severe BOAS signs. In both breeds, the more severely affected dogs performed both exercise tests more poorly than those with no or mild BOAS signs. The longer exercise, namely the 1,000-m test, seemed slightly better able at differentiating between affected dogs and less affected ones. The results of this study further support the use of exercise tests as an important part of the breeding selection in French Bulldogs and Pugs. By influencing the breed standards set by Kennel Clubs and by using breeding selection tools, the harmful impacts of brachycephaly can be diminished.

Keywords: animal welfare, brachycephalic obstructive airway syndrome, dog, French Bulldog, Pug, walk test

Introduction

The enormous growth in popularity of brachycephalic breeds (Emmerson 2014; Kennel Club 2017, 2018), such as the French Bulldog, Pug and English Bulldog, and the high prevalence of several health problems occurring in these breeds has created a major welfare issue. The breathing difficulties, known as brachycephalic obstructive airway syndrome (BOAS), are directly linked to the short anatomical structure of the skull (Oechtering 2010; Emmerson 2014). BOAS includes a variety of clinical signs, such as loud upper respiratory sounds, snifing, respiratory distress, sleeping disorders, exercise and heat intolerance, cyanosis, gastrointestinal signs and, in severe cases, fainting or even death (Hendricks 2004; Poncet et al 2005, Riecks et al 2007; Roedler et al 2013).

As BOAS is related to congenitally flattened facial and skull anatomy, the key to healthier brachycephalic dogs lies in the breed standards set by kennel clubs and the breeding choices made by breeders (Oechtering 2010; Packer & Tivers 2015). By avoiding extreme facial structures and selecting dogs without clinically relevant BOAS signs, the harmful consequences of brachycephaly might be reduced and the welfare of the offspring increased. However, not all owners and breeders recognise the signs of BOAS or interpret them as normal for the breed (Packer et al 2012; Roedler et al 2013). Therefore, an objective, non-invasive and economical test to guide responsible breeding choices is urgently needed.

An easy way to objectively predict probability of BOAS affectedness on a larger scale would be a soft tape measurement of conformational risk factors, such as the craniofacial ratio (CFR) (Packer et al 2015). However, since the muzzle length is extremely short and its variation within brachycephalic breeds is minimal, the CFR has not been proven to reliably predict the BOAS affectedness in these dogs (Liu et al 2017). In terms of other conformational risk factors, visually assessed stenosis of the nostrils has been found to be a strong predictor of BOAS in all three of the most popular brachycephalic breeds, the French Bulldog, Pug and English Bulldog, and neck girth ratio in male English Bulldogs (Liu et al 2017). However, not all individuals with a low CFR or stenotic nostrils suffer from BOAS (Packer et al 2015; Liu et al 2017). Moreover, the respiratory function measurement with whole-body barometric plethysmography (WBBP) has been demonstrated to be an objective and reliable method of