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Respiratory Function Grading Scheme Overview

Brachycephalic Obstructive Airway Syndrome (BOAS) is a condition which may cause breathing difficulties in breeds such as Bulldogs, French Bulldogs and Pugs. BOAS is caused when the soft tissue in the nose and throat are excessive for the airway, partially obstructing the airway and making it difficult for them to breathe normally. BOAS is a progressive disorder and can impair a dog's ability to exercise, play, eat and even sleep. Clinical signs of BOAS are variable and may include noisy breathing, exercise and heat intolerance, regurgitation and dysphagia. Unfortunately many owners are unaware of the disease, and often interpret breathing noises or difficulties as simply normal for the breed.

In an effort to learn more about the condition, increase awareness, and ultimately reduce the incidence of BOAS, researchers at the University of Cambridge in the UK developed the Respiratory Function Grading Scheme (RFGS). The goal of the RFGS was to develop an objective test to measure the clinical diagnosis and severity of BOAS. The OFA has joined this international effort and has licensed the RFGS for use here in the US and Canada.

The exam is conducted by a specially trained and approved veterinarian and consists of 4 steps:

1. A short health survey regarding the dog's breathing history
2. A brief physical exam while the dog is calm including auscultation where the assessor listens to the dog's breathing with a stethoscope gently positioned on the side of the neck. This establishes a baseline for any clinical signs of BOAS.
3. A short exercise test consisting of a brisk three minute walk. This is designed to expose clinical signs of the disease in an otherwise calm and asymptomatic dog. It is not designed to assess cardiovascular fitness.
4. A post exercise auscultation after increased airway activity to compare to the pre-exercise baseline.

The noises the trained veterinarians are listening for during auscultation include:

- **Stertor** – a low pitched vibrational noise heard above the level of the larynx
- **Nasal sterter** – low pitched nasal snort/vibration
- **Stridor** – higher pitched 'sawing' noise heard over the larynx
- **Nasal stridor** – higher pitched nasal whistle, usually on breathing in

The Respiratory Function Grading Scheme (RFGS) utilizes a sliding scale of 0 to 3 to objectively diagnosis BOAS:

- **Grade 0** – the dog is clinically unaffected and free of any respiratory signs of BOAS (no evidence of disease, no BOAS related noise heard even with a stethoscope)
- **Grade I** – the dog is clinically unaffected but does have mild respiratory signs linked to BOAS (noise is mild and only audible with a stethoscope)
- **Grade II** – the dog is clinically affected and has moderate respiratory signs of BOAS (noise is audible even without a stethoscope)
- **Grade III** – the dog is clinically affected and has severe respiratory signs of BOAS (noise is audible even without a stethoscope)

*** NOTE – If a dog exhibits respiratory difficulty, cyanosis or dyspnea, it is not necessary or advisable to conduct the exercise test as these dogs are already in the Grade III range.

Orthopedic Foundation for Animals

2300 E Nifong Blvd, Columbia, MO 65201 • Phone (573) 442-0418 • Fax: (573) 875-5073

www.ofa.org • Email: ofa@ofa.org

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Both Grade 0 and Grade I are considered to be clinically normal and BOAS unaffected as they exercise without difficulty and do not appear to have any clinical signs related to airway obstruction. Clinically normal dogs (Grades 0 and 1) will receive OFA certification numbers, and their results will post on the OFA website. In Grades 2 and 3, when stertor or stridor noise is heard without a stethoscope, whether intermittent or continuous, these dogs are considered affected with clinical signs affecting quality of life. Results for dogs with Grade 2 or 3 results will only post to the OFA website if their owners authorize release of abnormal data. All results will be shared with the international team of collaborators for statistical purposes, but individual abnormal results will never be publically released unless specifically authorized.

Using the RFGS grades and the guidelines in the chart below, concerned responsible breeders can apply the selective genetic pressure to reduce the chances of producing puppies affected by BOAS. However, since the inheritance of BOAS is not fully understood and is not entirely predictable, this guidance cannot guarantee that all puppies from unaffected parents will be free of BOAS.

		DOG ONE (sire or dam)			
		Grade 0	Grade 1	Grade 2	Grade 3
DOG TWO (sire or dam)	RFG Grade for each dog				
	Grade 0	Green	Green	Green	Red
	Grade 1	Green	Green	Green	Red
	Grade 2	Green	Green	Yellow	Red
Grade 3	Red	Red	Red	Red	

Green — these mating combinations have the lowest risk of producing puppies affected by BOAS

Yellow - a Grade II to Grade II mating will increase the risk of producing puppies affected by BOAS

Red — these mating combinations have a high risk of producing puppies affected by BOAS and are not recommended

The registration and exam process is paperless and requires owners to establish an account with OFA Online at: <https://online.ofa.org> . The \$15 OFA registration fee is charged at the time of the exam. The individual exam fees are separate and set independently by the examining veterinarians.

To achieve success, the program will require participation from multiple stakeholders. The OFA administers the program and database, shares results with The Kennel Club in the UK for inclusion in the international statistics, and identifies, trains and approves veterinarians with a specialized interest in the brachycephalic breeds and respiratory health as RFGS assessors. Breed clubs organize and sponsor screening events to make the program available regionally. And responsible breeders use the tool to screen their breeding stock and include the results in their selection criteria.

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