



PREVALENCES AND HEALTH TESTING FOR EXCESSIVE CONFORMATION FOR DOGS IN FINLAND

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Research interests
Breeding selection, brachycephalic
obstructive airway syndrome and
conformation related skeletal disorders in
dogs

Dog population in Finland

- There are approximately 800 000 dogs in Finland of which ~ 60-70% are pedigree dogs
 - Unique opportunity for the **Finnish Kennel Club (FKC)** to guide dog breeding and health
 - **FKC has several health tests**, including those aimed for excessive conformation, **for breeding selection**
 - All FKC health tests are based on scientific research
 - Yearly around 90 000 health test results are recorded to **FKC open breeding database**



Image FKC

Brachycephalic obstructive airway syndrome (BOAS) testing in Finland

- **BOAS** is directly linked to **short facial conformation** seen in brachycephalic i.e., flat-faced dogs
- **Evaluation of FKC BOAS test** (Lilja-Maula et al. 2017, Aromaa et al. 2019, Aromaa et al. 2021) **results from 2017-2022** (Lilja-Maula et al. 2024)
 - The majority (80%) of dogs (n=957) were English Bulldogs, French Bulldogs, and Pugs
 - **Altogether 77% of tested dogs were BOAS-** (i.e. had no or mild upper respiratory signs)



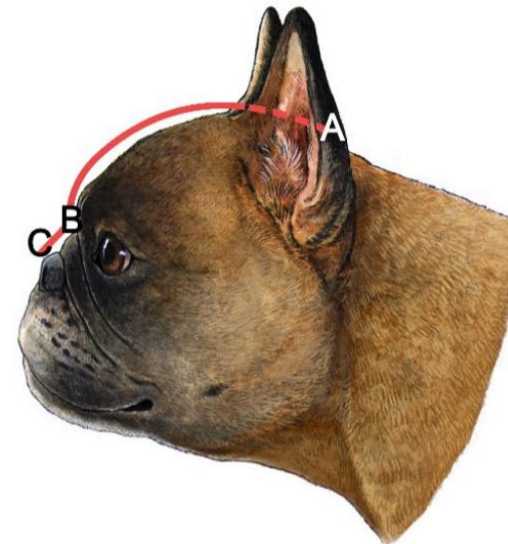
Image FKC

Bracycephalic obstructive airway syndrome (BOAS) testing in Finland

- Evaluation of FKC BOAS test results from 2017-2022 (*Lilja-Maula et al. 2024*)
 - **Nostril stenosis** (moderate to severe) was **highly prevalent** finding
 - In some breeds, such as pugs, only 29% had open or only mildly stenotic nares.
 - **Hyperthermia** related to exercise was seen especially in English bulldogs and Pekingese
 - **Only few dogs** (mainly English bulldogs) had **CFR over 0,33**
 - **Heritability for BOAS grade** was **moderate to high** (0,39-0.58)



Severely stenotic nares,
Image Liisa Lilja-Maula



Cranio facial ratio= bc/ab
(*Packer et al. 2015*)
Image FKC

Radiographic vertebra anomaly (VA) grading in Finland

- **Graded** (Anttila 2016) in FKC from **VA0** (no vertebra anomalies) to **VA4** (10 or more vertebra anomalies)
- VAs are **highly common in screw tailed dogs**
 - For example, the most common grading result in FKC database for French Bulldogs is VA3, and around 20% of FBs have VA4



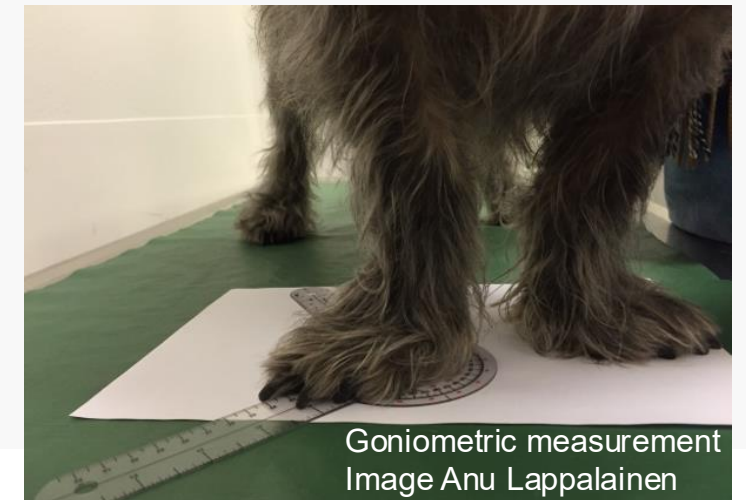
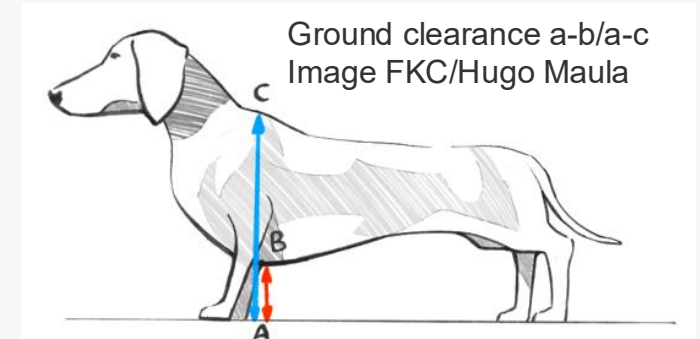
Radiographic elbow incongruence (INC) grading for chondrodysplastic breeds in Finland

- Elbow incongruence is mostly seen in chondrodysplastic i.e. **short-limbed dogs**
- **Graded** (Lappalainen et al. 2016 and Pulkkinen et al. 2020) in FKC from **INC 0** (no incongruence) to **INC3** (severe incongruence)
- In general, **moderate to severe incongruence is rare** (FKC database), **but some breeds**, such as Skye terriers, **can have high prevalences**
 - In Finnish Skye Terrier population (Lappalainen et al. 2016) in total, 49% (22/45) of the dogs had moderate or severe elbow joint incongruity which associated with lameness



Front leg external rotation and carpal valgus measurements for chondrodysplastic breeds

- A test to assess **front leg external rotation (ROT)** and **carpal valgus (VALG-M)** (Pulkkinen et al. 2022 and Lappalainen et al. 2023) with **goniometry** and **measurement of ground clearance** will be implemented in FKC 2026/2027 for chondrodysplastic i.e. short-limbed breeds
- In Finnish population of three chondrodysplastic breeds (30 Dachshunds, 53 Glen of Imal Terriers and 29 Skye Terriers) **ROT and VALG were associated with several measurable clinical abnormalities in limb function** and occurred also independently of INC (Lappalainen et al. 2023)
 - Grading scale/breed specific limits will be established later



Persistent fontanelles

- In Finnish population of adult Chihuahuas **persistent fontanelles (PFs) were very common** (46/50 had at least one PF) (Kiviranta et al. 2021 Part I & Part II, Rautala et al. 2025)
 - **More and larger PFs** were seen in dogs with **greater brachycephalic** skull morphology and **small size**.
 - In addition, **lower bodyweight** was **associated with more extreme brachycephaly**.

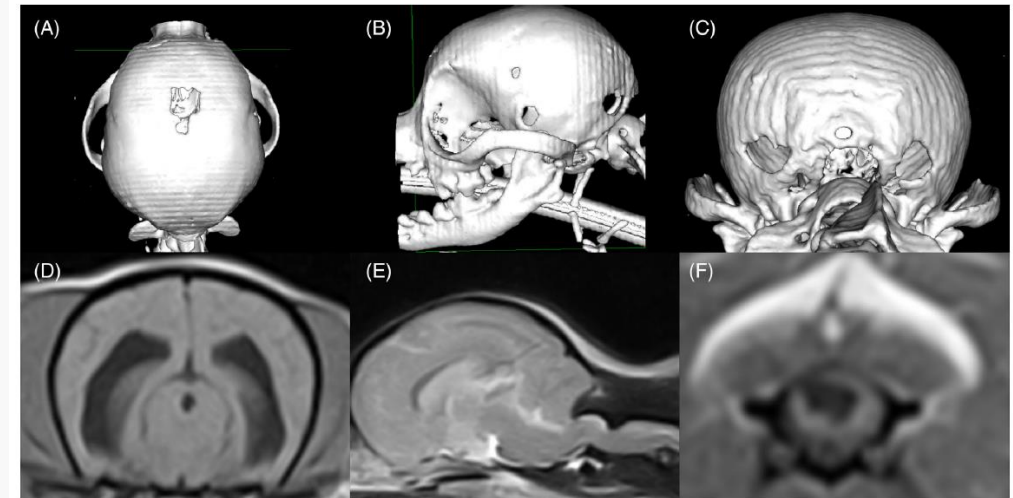


FIGURE 3 A Chihuahua (weight 3.5 kg) with multiple persistent fontanelles, ventriculomegaly, syringomyelia, and craniocervical junction overcrowding. A-C, Volume-rendering-technique computed tomography image of a Chihuahua skull in dorsal (A), left lateral (B), and caudal (C) views, showing multiple, persistent fontanelles (total fontanelle area of 214 mm²). D, T1-weighted transverse brain magnetic resonance image of the same dog in (A-C), showing moderate ventriculomegaly (ventricular volume 2.9 mm³). E, T2-weighted sagittal brain and spinal cord (C1-C5) magnetic resonance image of the same dog in (A-C), showing concomitant medullary elevation and dorsal spinal cord compression at C1-C2 (sum index 0.68) and syringomyelia at C2-C3. F, T1-weighted, transverse spinal cord magnetic resonance image of the same dog from (A-C), showing an asymmetrical syringomyelia (maximum width 4.7 mm) at the level of C3 and extending into the left dorsal horn

Kiviranta et al. 2021 Part II



Image Anna Nygård

Thank you!

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