



Core Behavioral Domains for Explosives Detection Canines



Foundational Dimensions of Behavior Critical to Performance

Environmental Soundness

Lack of fearfulness toward novel objects, sudden movement, loud noises, and unfamiliar environments

- Strongest and most consistent predictor of failure across ages, cohorts, and disciplines
- Substantial genetic basis
- Dogs with mild to moderate environmental fearfulness can excel at detection tasks in more stable, predictable environments

Search Engagement

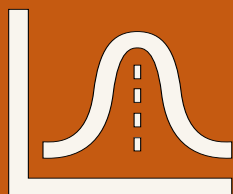
Persistence during a search with minimal encouragement required from handler to complete the task

- Important and reflective of *intrinsic* motivation to hunt, which is more resilient to disruption than extrinsically motivated behavior
- The predictive value is strong in mature dogs, but less reliable at younger ages

Arousal Regulation

Physiological and behavioral activation (energy, alertness, and excitement of the dog) while working

- Reflects motivation and readiness to perform a task
- Often conflated with “drive”, selecting for high energy and motivation frequently results in dogs with a low threshold for over-arousal which can have negative effects on performance
- The ideal detection candidate exhibits moderate levels of well-regulated arousal



Reward Interest

Strong interest in obtaining and interacting with physical reward objects

- Critical for task-specific learning
- Especially important for maintaining motivation to work in dogs with less intrinsic search motivation, as desire to obtain the reward is the ultimate goal rather than the task itself
- Like search engagement, the predictive value is less reliable in young puppies

References/resources

- Lazarowski et al. (2020). Selecting dogs for explosives detection: Behavioral characteristics. *Front. Vet. Sci.*, 7, 597.
- Lazarowski et al. (2023). Longitudinal stability of detection dog behavioral assessment: a follow-up study of long-term working success. *Appl. Anim. Behav. Sci.*, 268, 106082.



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