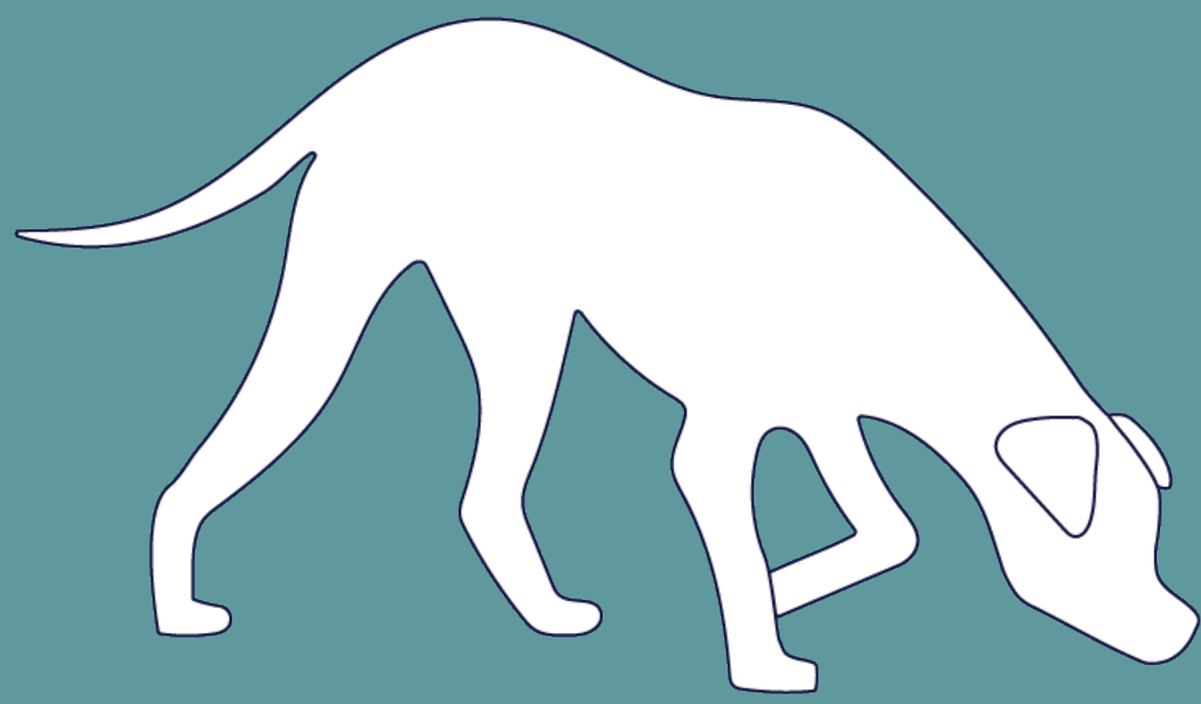
# Progressive increases of blank searches in training can improve detection canine performance in operational conditions with infrequent target odors

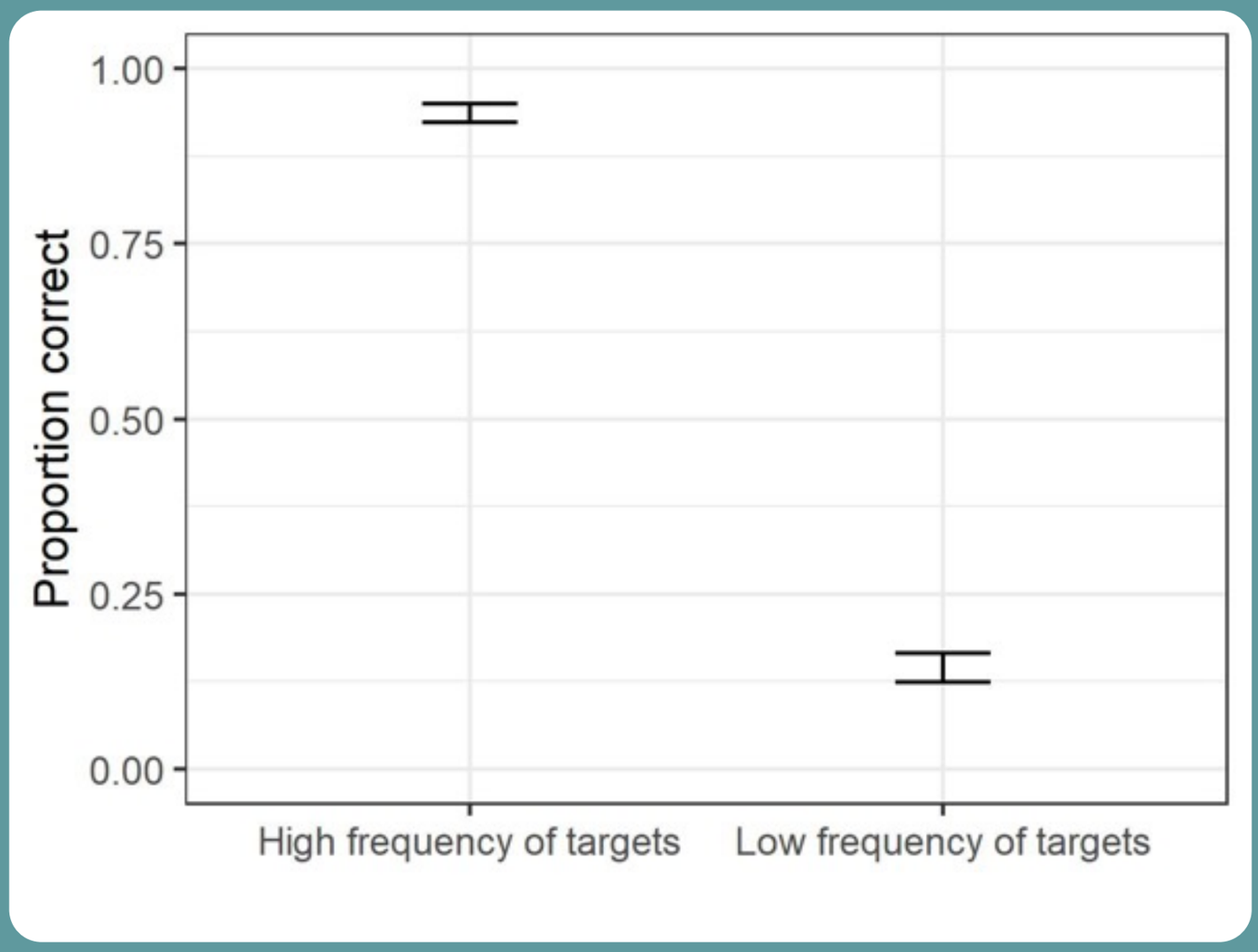
Canine Olfaction Research and Education Laboratory
Forensic Analytical Chemistry and Odor Profiling Laboratory



# The Problem

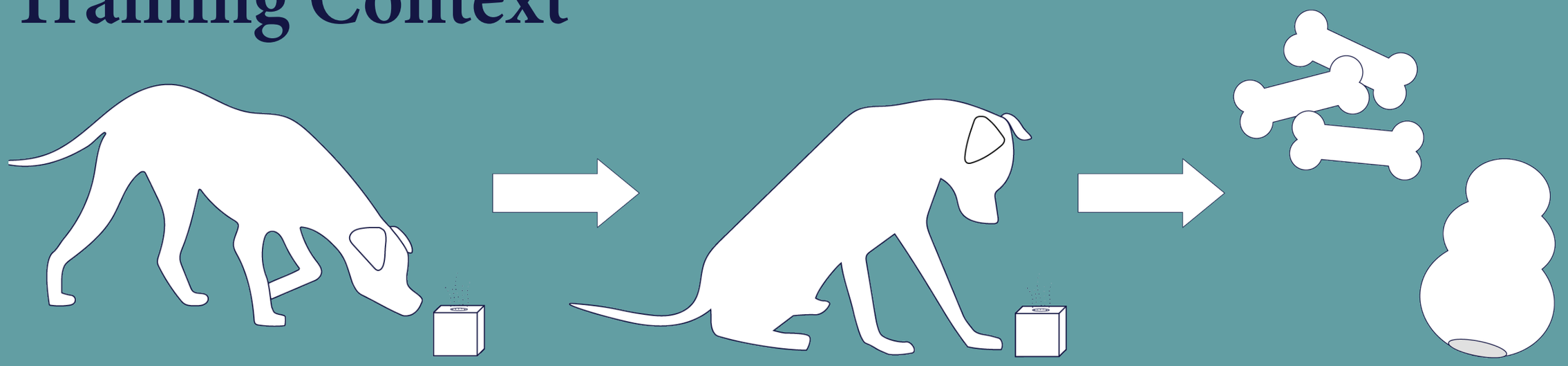
18 dogs were trained to detect smokeless powder in line-ups in two unique areas, a training area and an operational area. During training, 90% of the line-ups included smokeless powder.

When the rate of smokeless powder presence decreased to 10%, dogs took longer to start searching, showed inadequate search, and poorer accuracy.



# The Problem

## Training Context

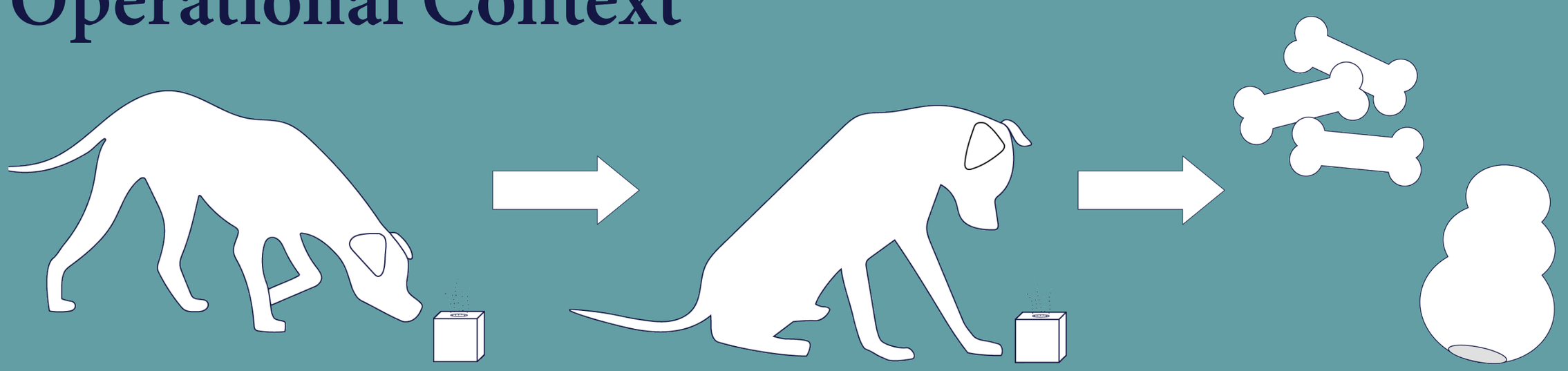


"Search" with 90% odor prevalence | Alert | Reinforcer

Results: 97% adequate search, 98% alert if nose in odor

**Overall accuracy: 93%**

## Operational Context



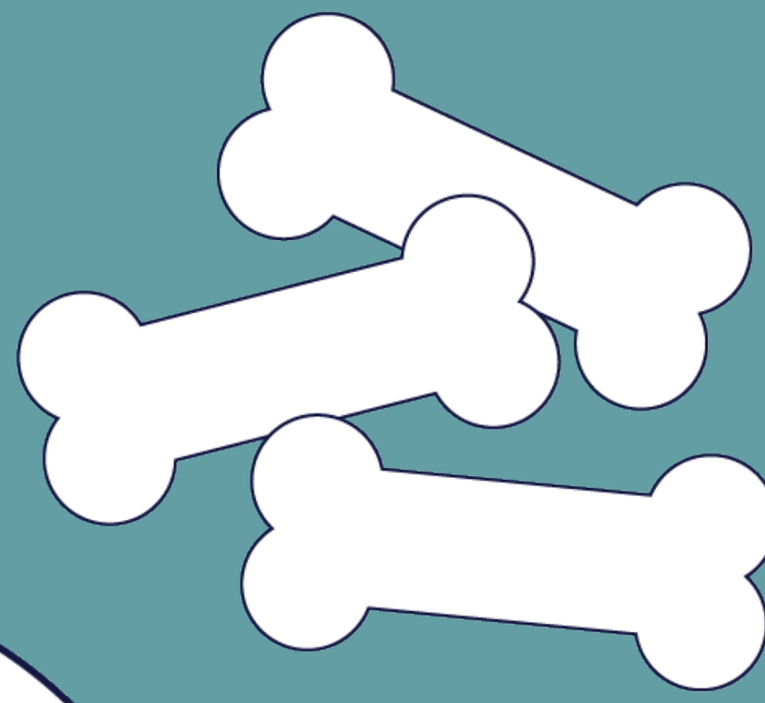
"Search" with 10% odor prevalence | Alert | Reinforcer

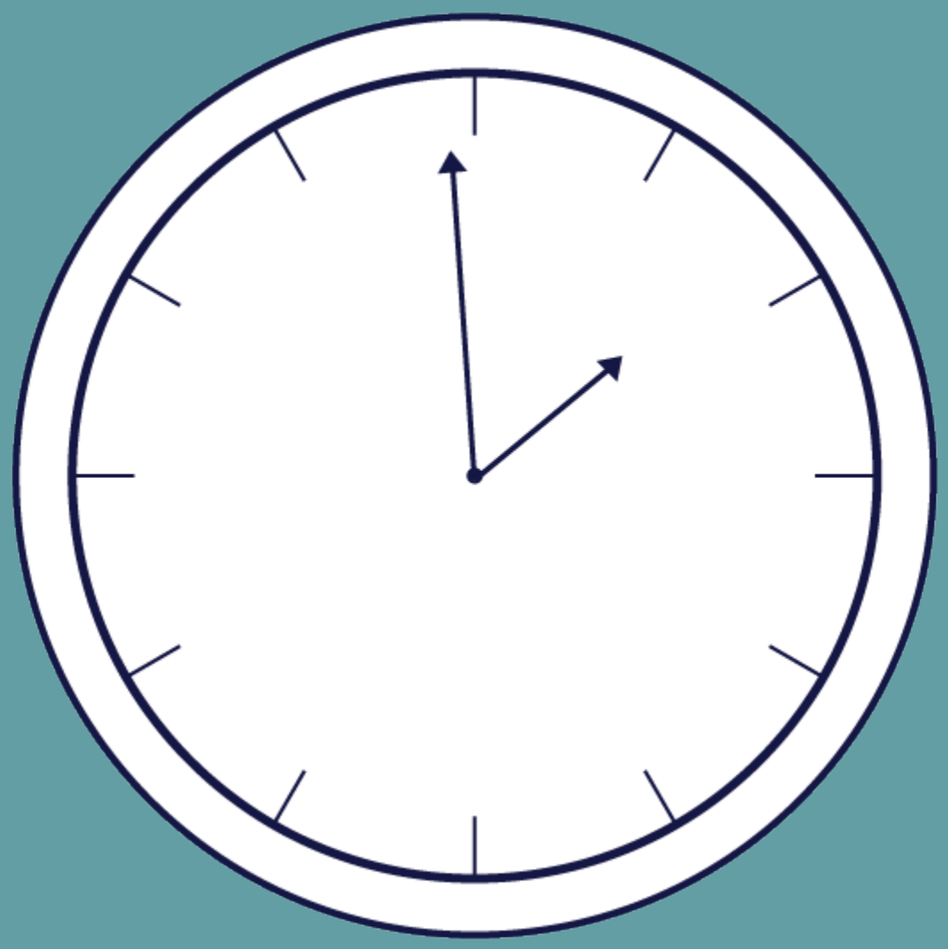
Results: 47% adequate search, 98% alert if nose in odor

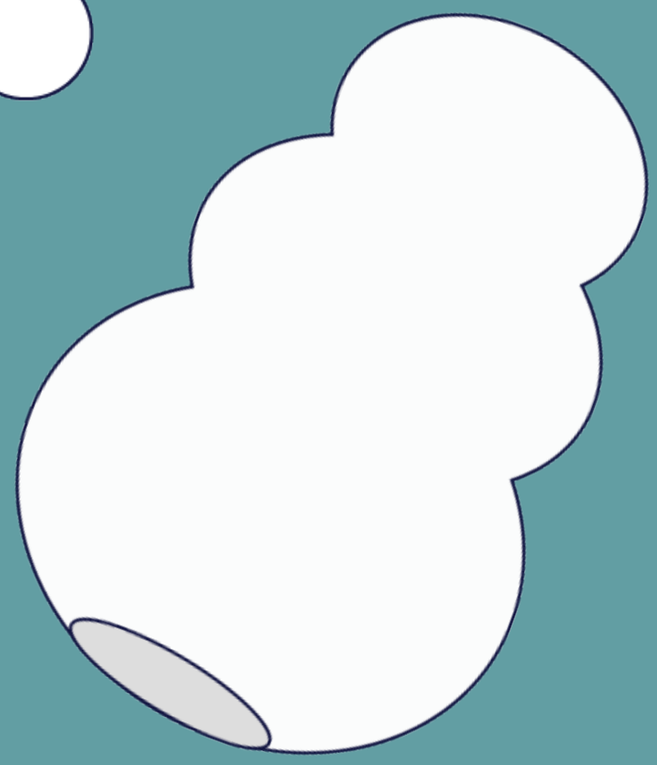
**Overall accuracy: 33%**

# Searching for a Solution

Delivering reinforcers on a time-based schedule, regardless of whether the dog came across the target odor or not, did not remedy a decrease in searches. This indicates that brief “play breaks” did not boost performance.



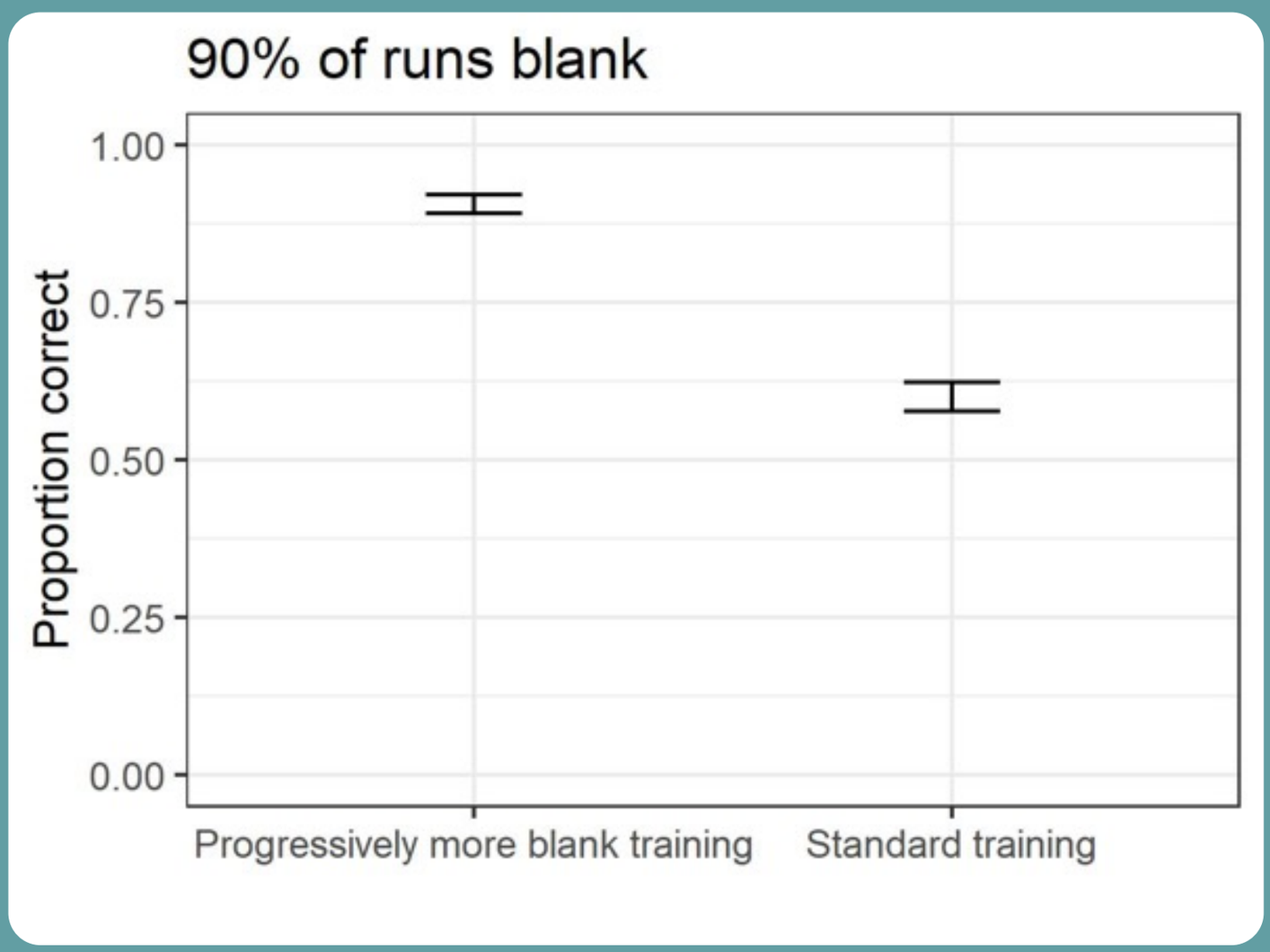




# Searching for a Solution

Half of dogs had progressively more blank searches incorporated in training (1, 2, 3…) until 80% of runs were blank. The remaining half of dogs stayed at only 1 blank per 10 runs.

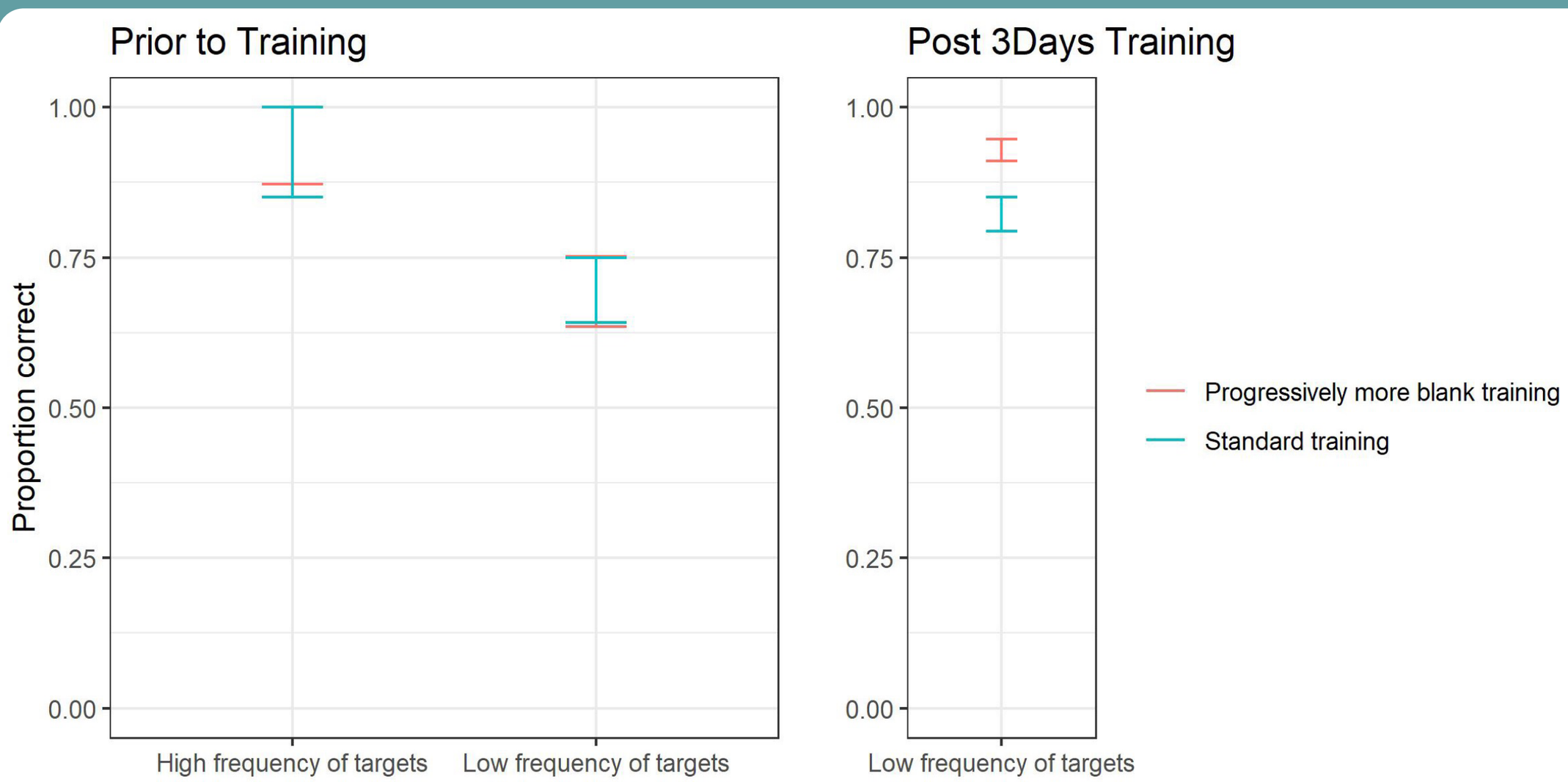
Training with progressively more blanks resulted in increased performance.



# Applying the Solution

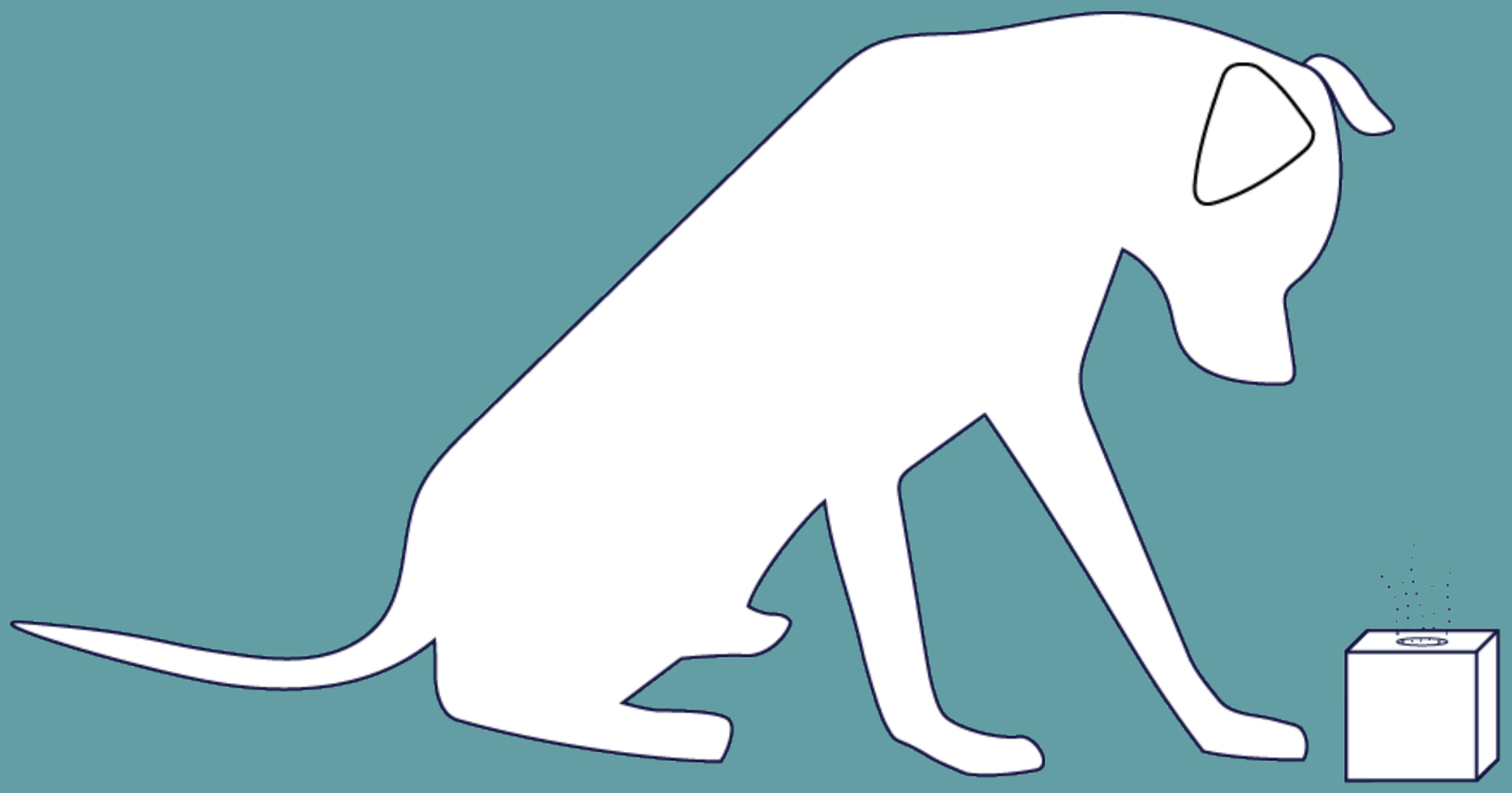
23 operational federal, state, city and private detection canines were tested. When challenged with a 90% blank rate, dogs' performance declined with an increase in false alerts.

Half the dogs then received training with progressively more blanks in training. Half remained where 90% of runs contained a target.



# In Conclusion

Introducing progressively more blank runs improved detection canines' resiliency to the challenge of few to no target odors during a repetitive search task.



For more details on this project, read the pre-prints:

Part I
Part II
Part III

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# For further reading consider:
# The role of context specificity Performance decline by search dogs

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CANINE OLFACTION LAB

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