Gait and structure evaluation for guide dogs

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Way back when…

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More recent history

- The Seeing Eye began systematically evaluating the gaits of young dogs before they entered training in 2010 in response to an increasing number of dogs with less-than-ideal movement

- A scale of 1-9 was established, with 9 being the most desirable, to characterize gaits in a manner that can be used to put selection pressure on this trait

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Evaluation process

- Experienced staff observe each dog's movement soon after they return to the main campus to be evaluated for training
- Two scorers observe the dogs and agreement on the gait score is very high
- Dogs are initially moved out and back on a straight line. Additional observation is made on a circle when desired
- A brief description of the gait is added to the dog's record in addition to the numerical score

Additional benefits

- Any dog that appears to be uncomfortable during the observation can be brought to the attention of the veterinary staff for treatment

- We have occasionally seen dogs develop abnormal gaits during training. The baseline description from the initial evaluation is helpful in determining any changes

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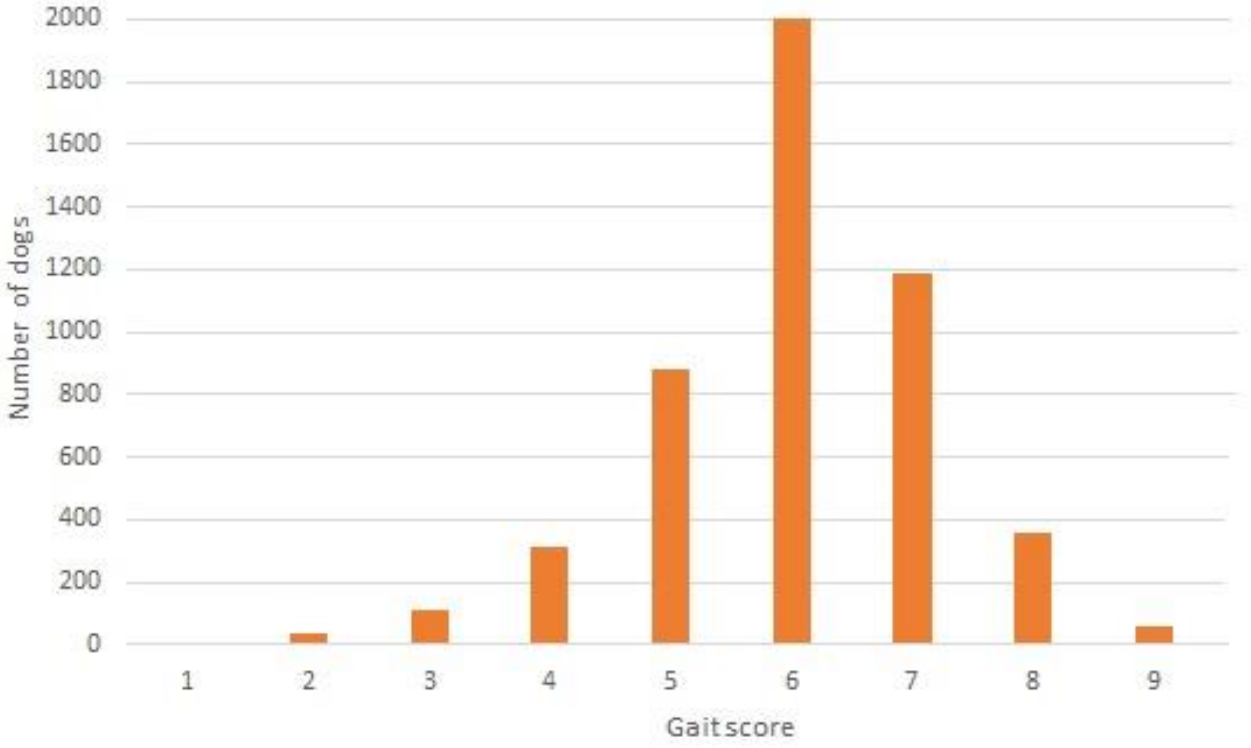
Gait score dataset

- Dataset of 4964 individuals on 31st March 2023
- Mean, median & modal score = 6



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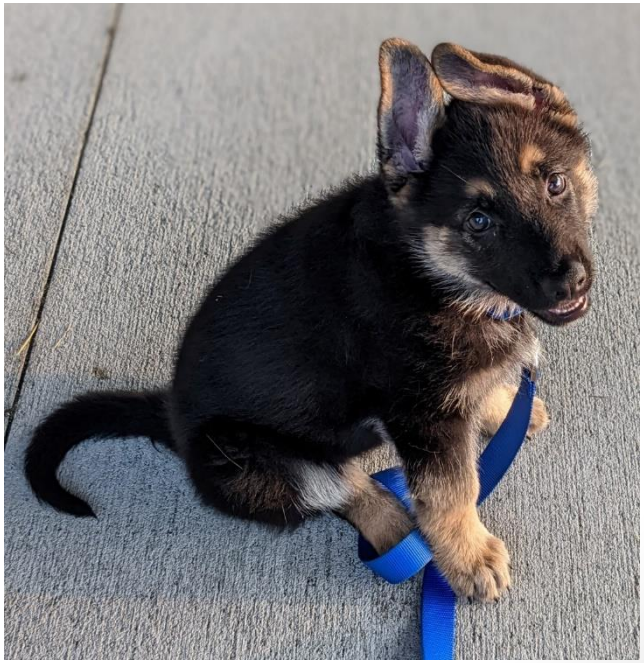
Multiple linear regression of gait score

- Breed and sex were significant effects (both $p<0.0001$).

- Being a German Shepherd and being male both associated with lower gait score



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Heritability estimates of gait score

- Using REMLF90 in the BLUPF90 suite of programs

- Sex included as an effect in purebred models, breed and sex included as effects in crossbreed model

- Heritability estimates:

  GS – 0.36
  LR – 0.28
  GR – 0.15
  LRGRX – 0.26

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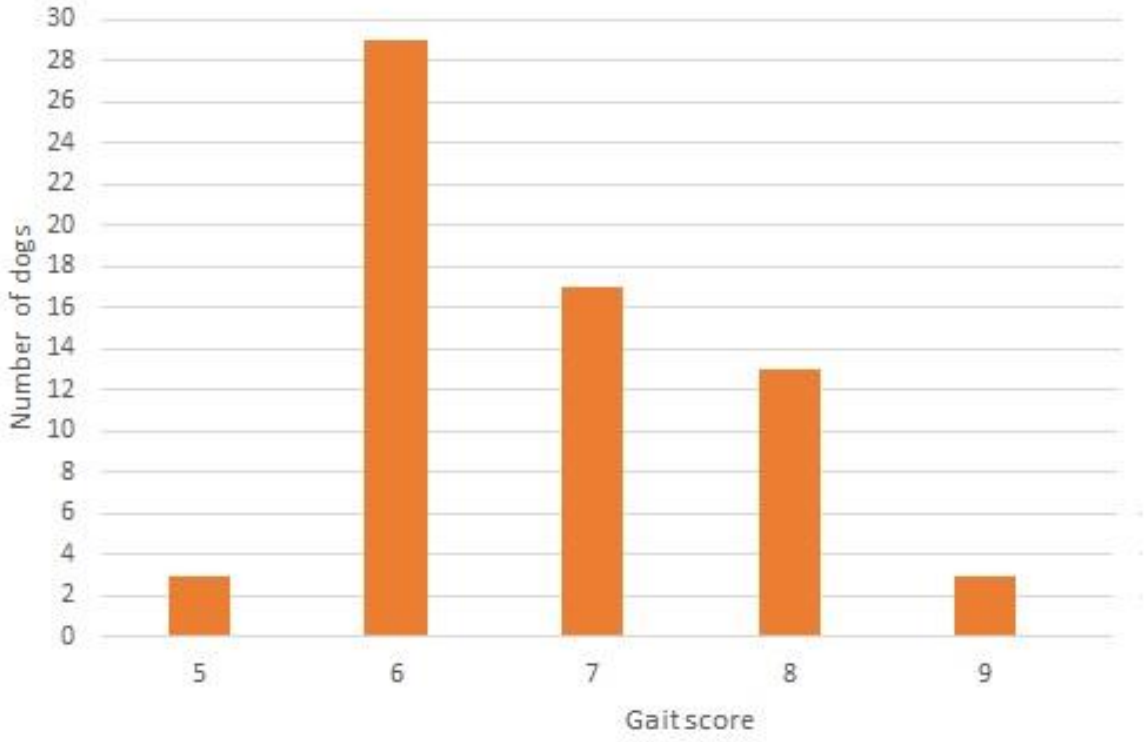
Gait scores – current breeders

- 66 breeders currently
- Mean score 6.75, median 7, mode 6



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Male Lab backcross – score 9

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Male Golden Retriever – score 8

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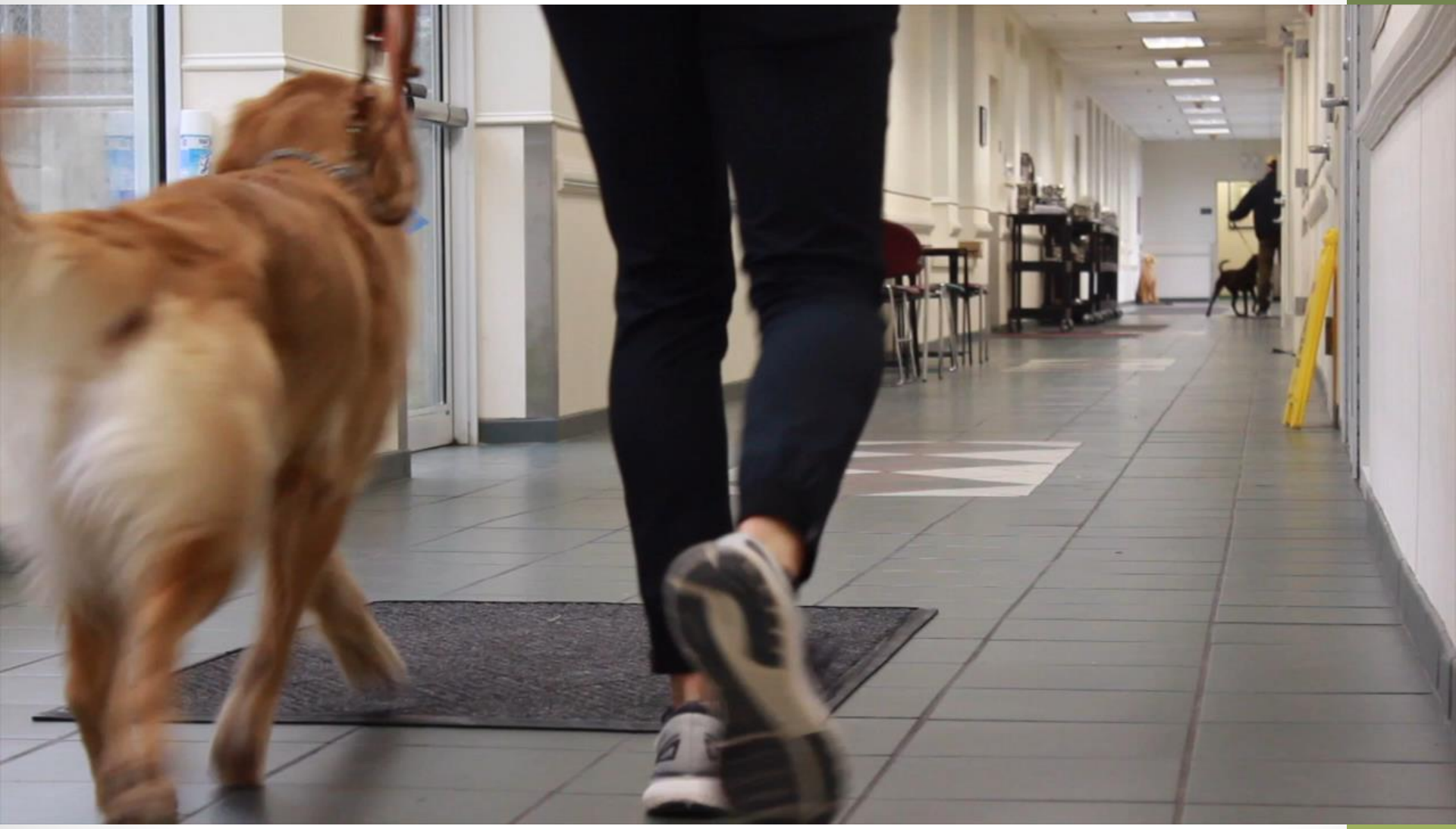
Male Golden Retriever – score 6



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Male Lab backcross – score 6

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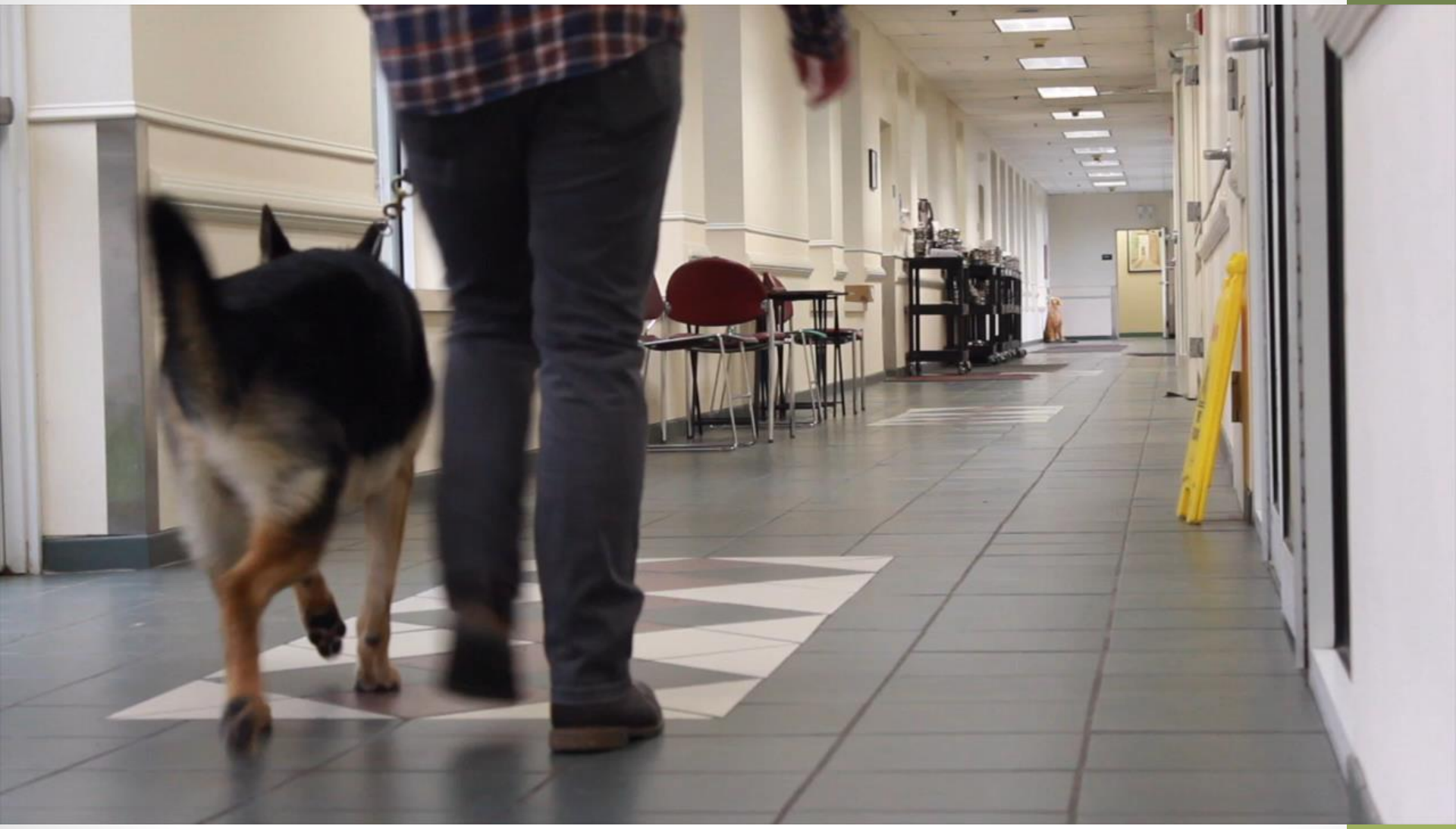
Male GSD – score 5



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Female Golden – score 6

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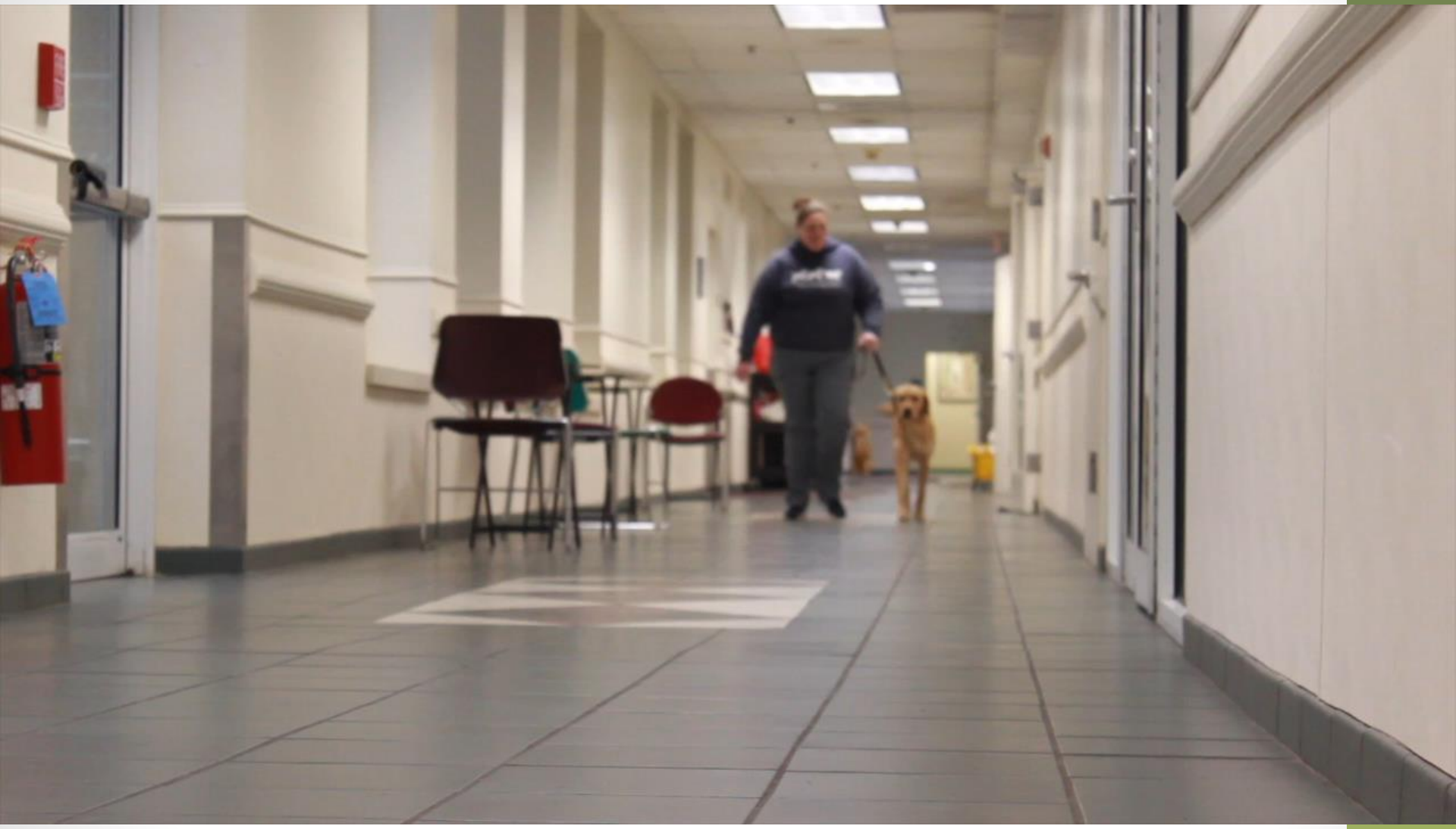
Male Labrador – score 4



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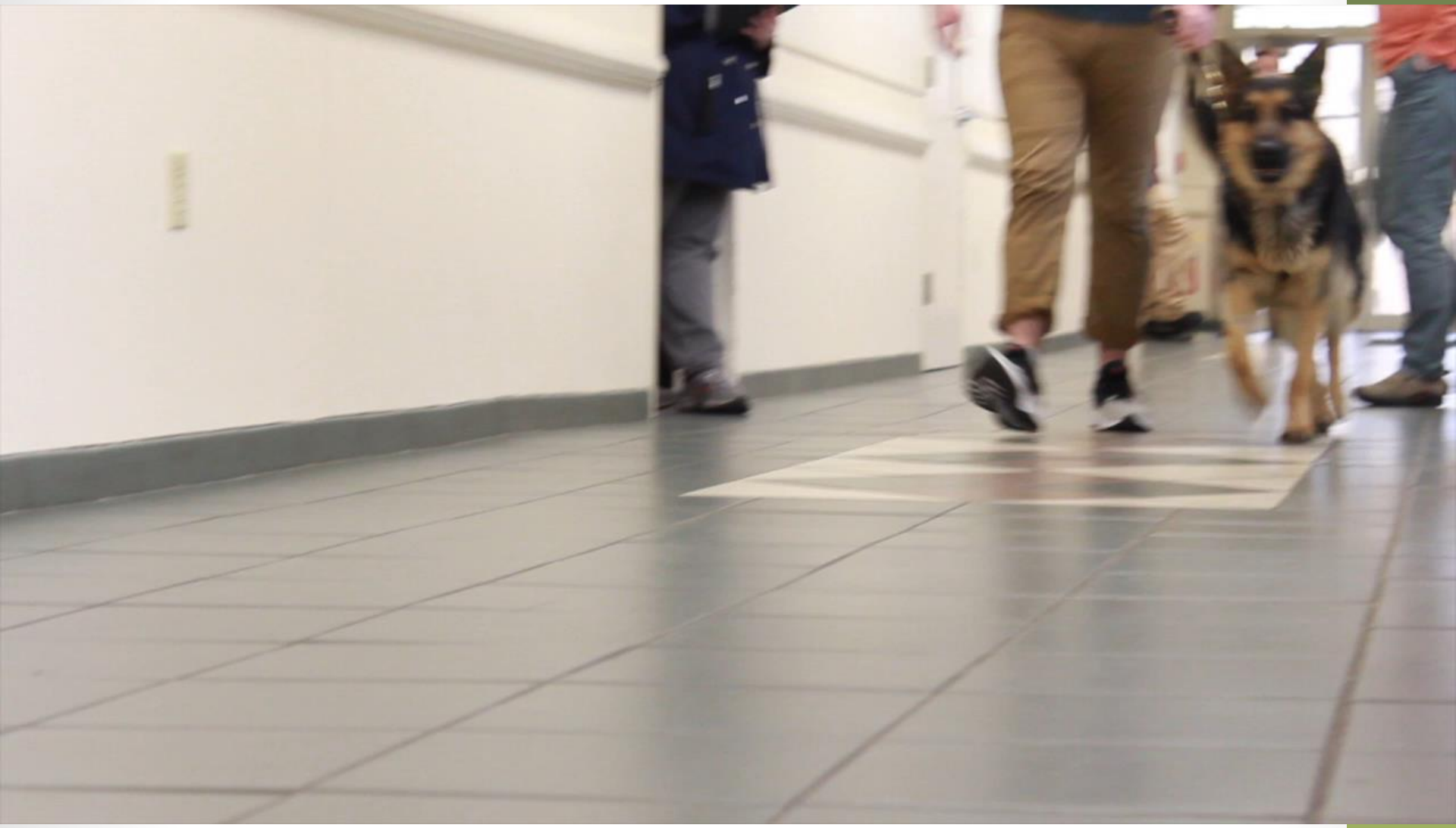
Male GSD – score 3



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Male Labrador – score 8

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Female Lab backcross – score 6

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Male Lab backcross – score 5

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Female GSD – score 5

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Male GSD – score 7

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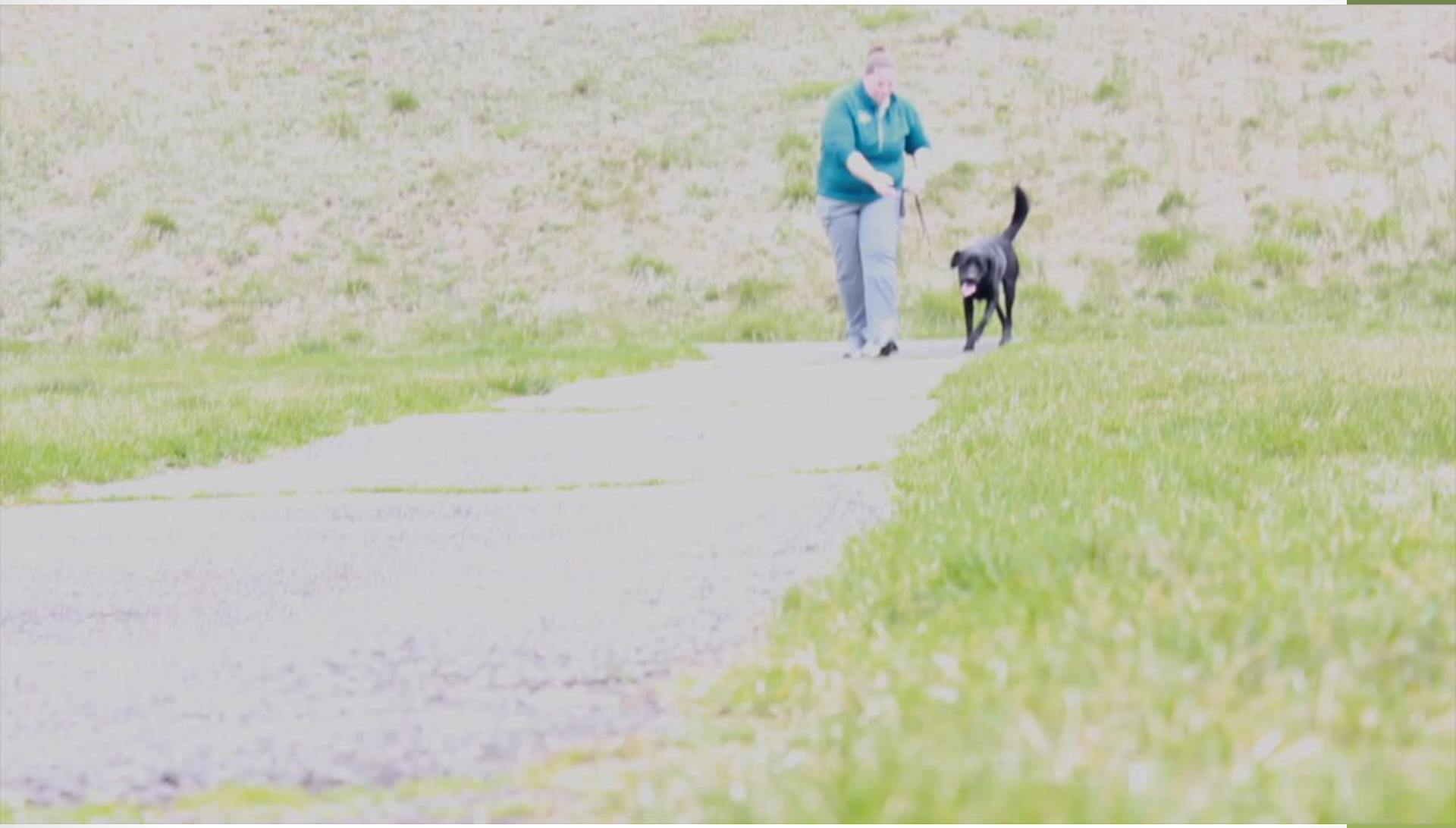
Male Lab backcross – score 5



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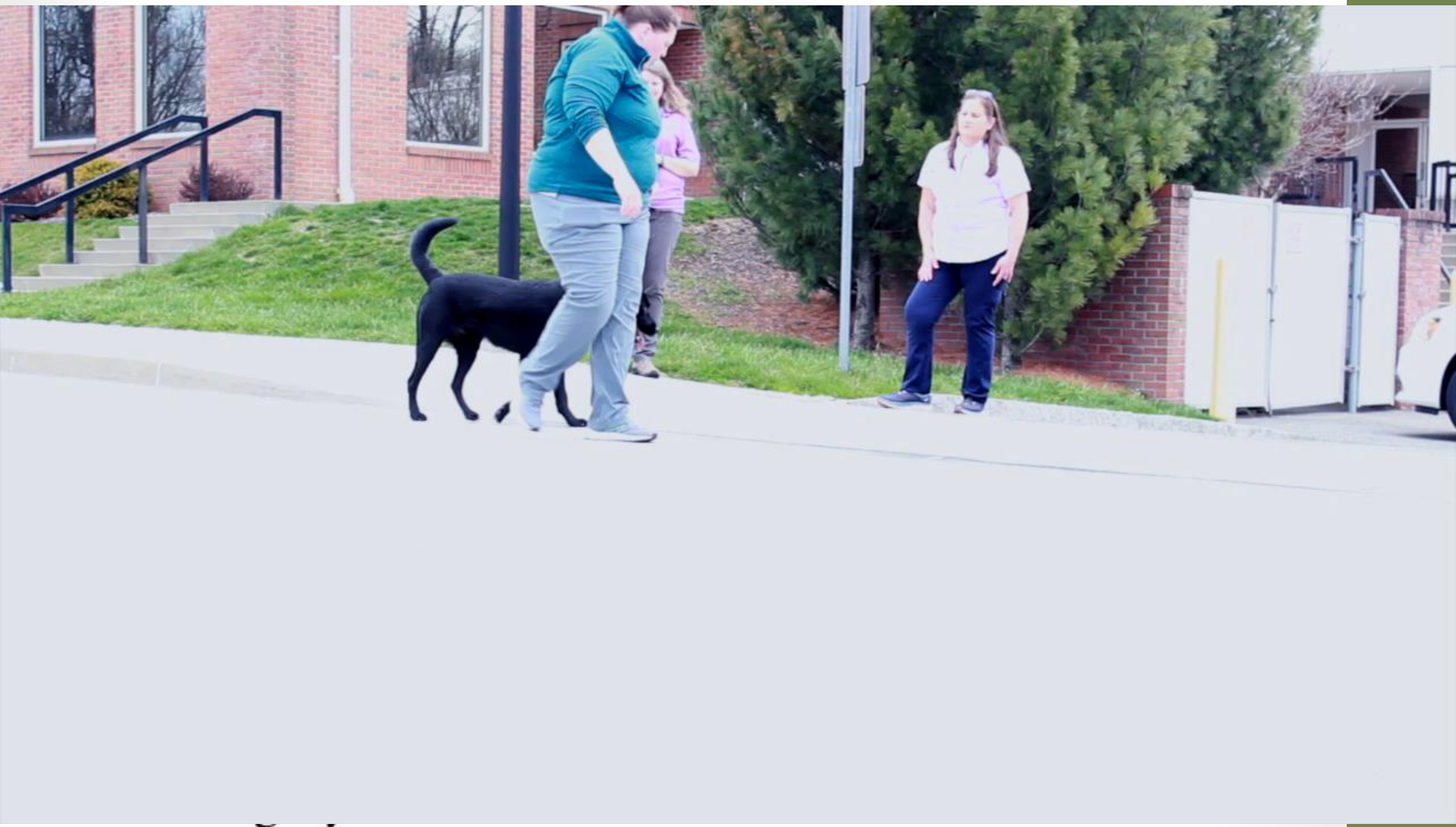
Male Lab backcross – score 5, on a circle



Male Lab backcross – pending!

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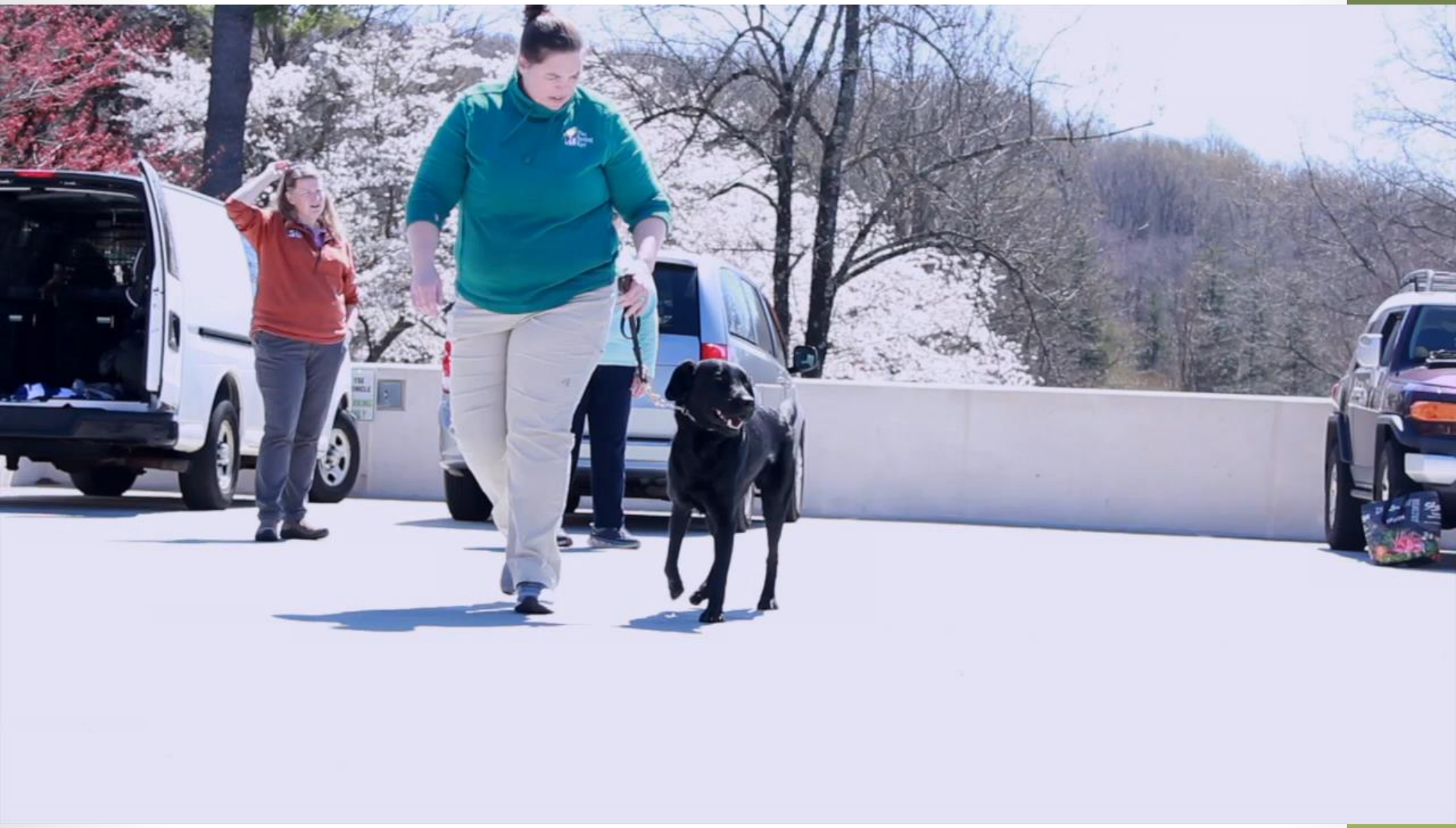
Male Lab backcross – pending!



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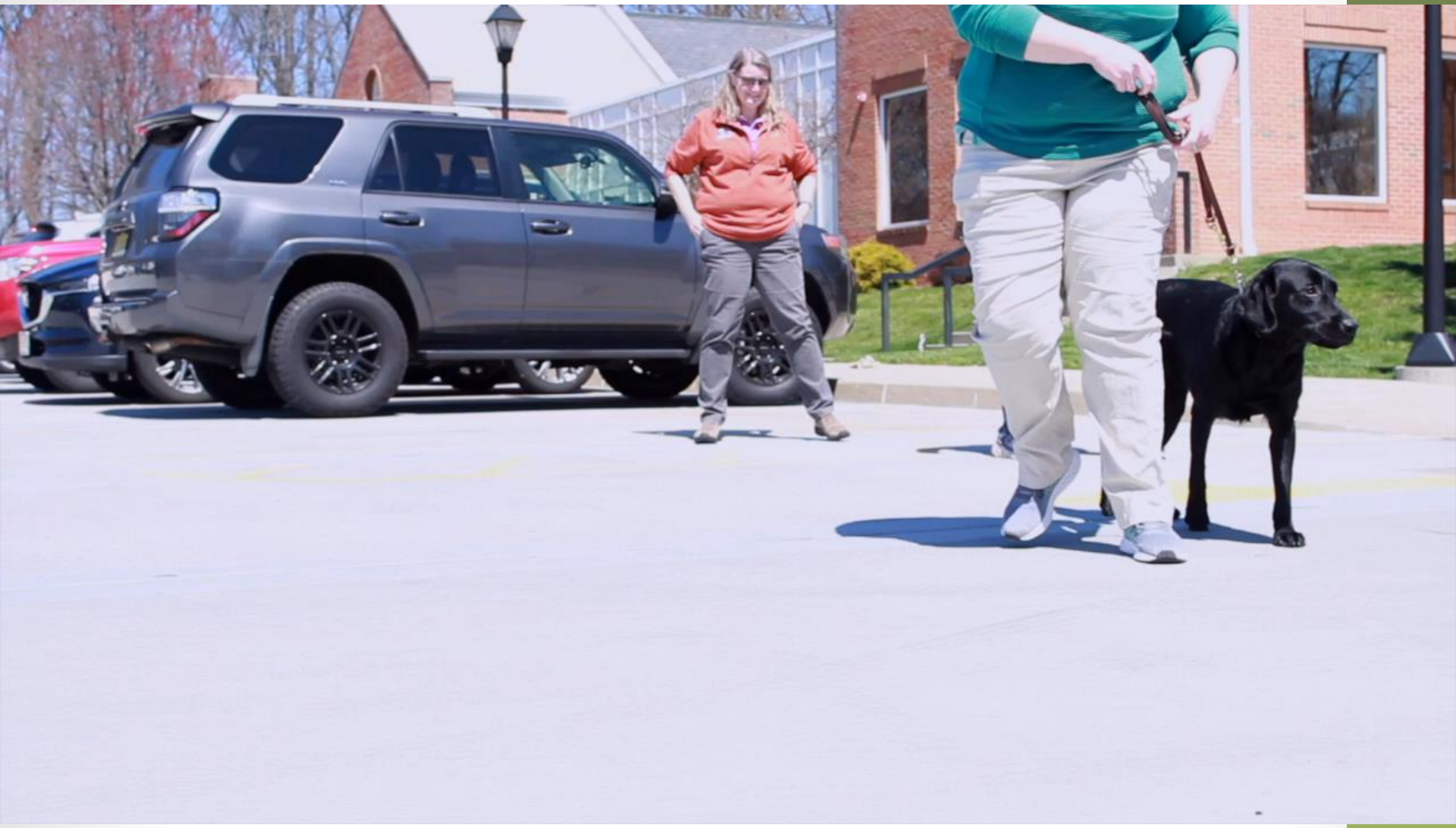
Male Lab backcross – pending!



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Male Lab backcross – pending!

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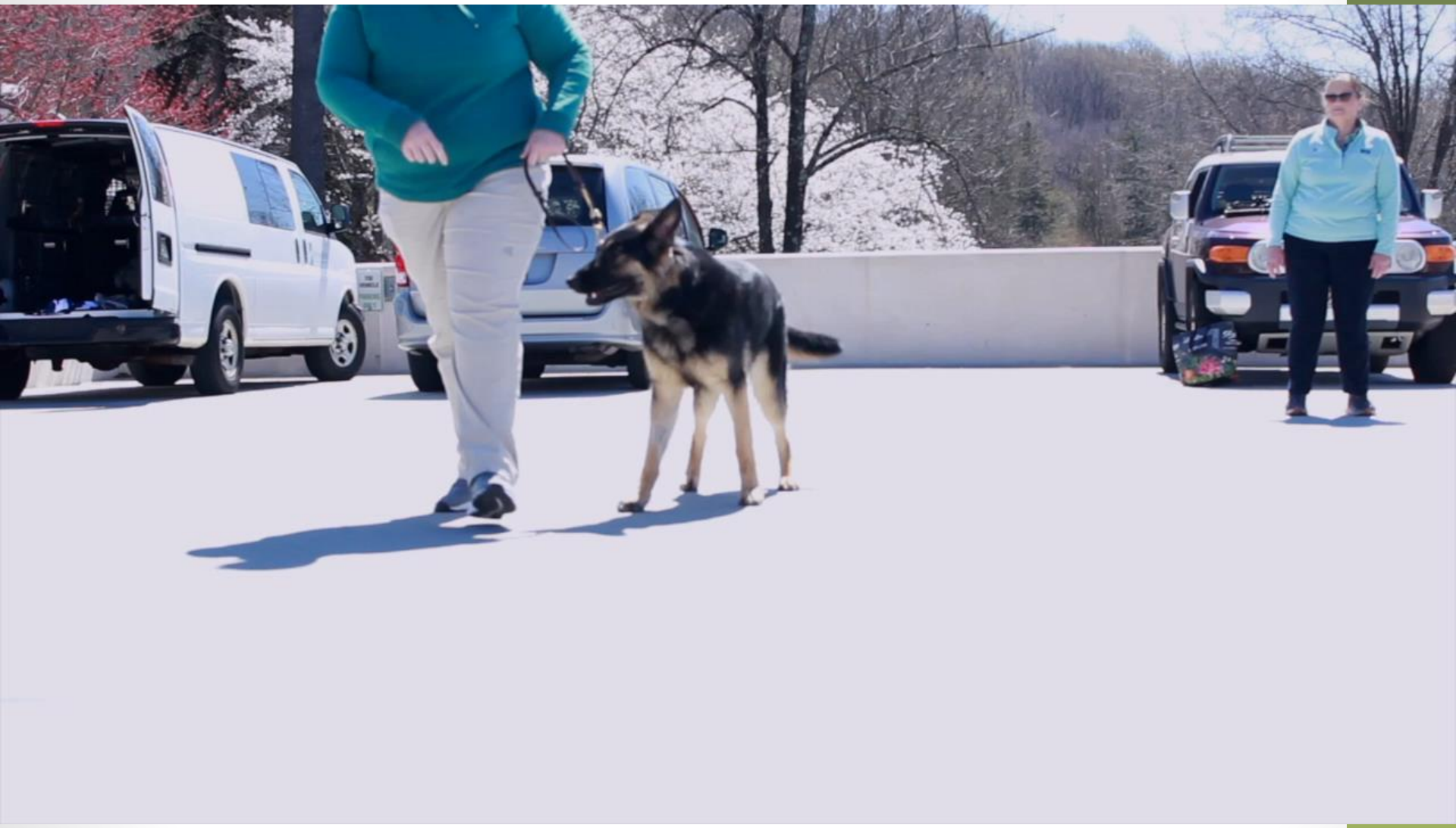
Male GSD – hip dysplasia



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Male GSD – HD, circle 1

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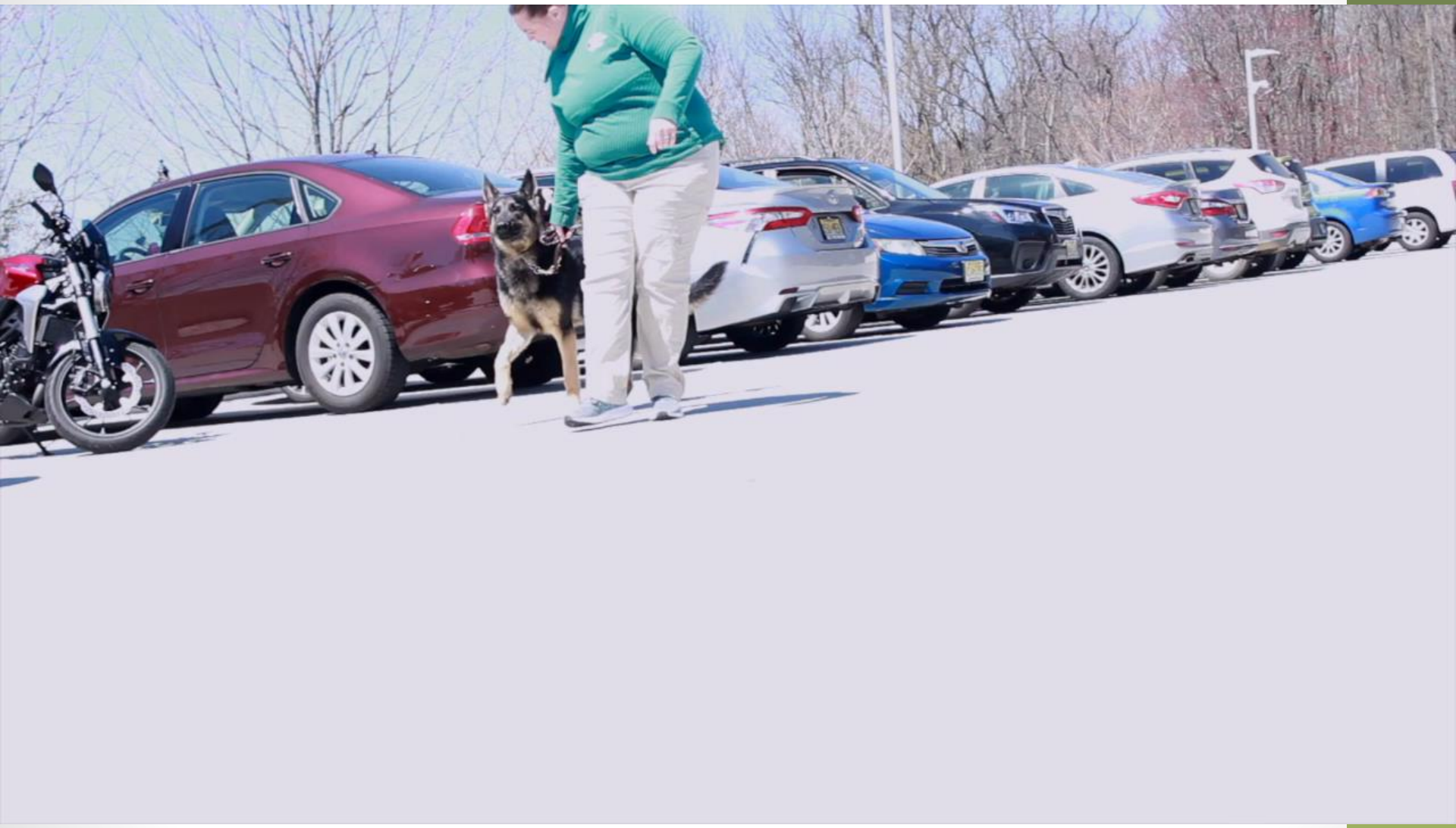
Male GSD – HD, circle 2



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Summary

- Useful to assess gaits of all dogs between arrival and starting training - frequently pick up undetected minor issues (e.g. sore feet)
- Dogs are sometimes released from our program due to poor gait/conformation even if no underlying disease condition is found
- Our gait score has a low to moderate heritability; EBVs would be possible if we wanted to increase selection pressure on this trait

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Acknowledgements

- Kristen DeMarco
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