

Exercise Induced Collapse (EIC)

Affected breeds:

Chesapeake Bay Retriever, Clumber Spaniel, Cocker Spaniel, Curly Coated Retriever, German Wirehaired Pointer, Labrador Retriever, Old English Sheepdog, Pembroke Welsh Corgi

EIC is an inherited condition which generally appears at between 5 months – 7 years of age. Affected dogs suffer a loss of muscle control after extreme exercise – typically after 5–25 minutes of exercise. Not all periods of exercise result in an EIC attack – normally the dog needs to be actively running for a period of time, and mild to moderate levels of exercise are well tolerated. Typically an EIC attack will result in the dog first losing balance, then the hind legs losing strength and coordination. The severity of the attack can vary for each dog, and also between dogs. The dog gradually recovers over a number of minutes.

Susceptible dogs are perfectly normal at rest and appear to be perfectly healthy in all other ways, however some attacks can be severe and in extreme cases dogs have died.



EIC is caused by a recessive genetic mutation. This means that dogs which carry the mutation ("CARRIERS") are normal but will pass the mutation on to an average of 50% of their offspring. Puppies which inherit two copies of the mutation will develop EIC ("AFFECTED").

This test is particularly useful for breeders:

- To identify carriers among their breeding stock so that they can avoid CARRIER X CARRIER mating combinations which would risk AFFECTED puppies.
- To conclusively confirm EIC

This test will be reported as:

CLEAR : no evidence of the EIC mutation

CARRIER : carries one copy of the defect, which will be passed to 50% of offspring

AFFECTED : carries two copies of the defect, and will have EIC

The genetic status of dogs can be used to predict breeding outcomes when different combinations are mated:

AFFECTED X AFFECTED = 100% AFFECTED

AFFECTED X CARRIER = 50% AFFECTED, 50% CARRIER

AFFECTED X CLEAR = 100% CARRIER

CARRIER X CARRIER = 25% AFFECTED, 50% CARRIER, 25% CLEAR

CARRIER X CLEAR = 50% CARRIER, 50% CLEAR

CLEAR X CLEAR = 100% CLEAR

References

A canine DNMT1 mutation is highly associated with the syndrome of exercise-induced collapse. Patterson EE, Minor KM, Tchernatynskaia AV, Taylor SM, Shelton GD, Ekenstedt KJ, Mickelson JR. Nat Genet. 2008 Oct;40(10):1235-9. doi: 10.1038/ng.224. Epub 2008 Sep 21.