Polymyositis and the new PM2 test, Updated 17 August 2026

Fortunately, a great many Kooikerhondjes have been tested since we provided the earlier information(22 april 2026) on the effects of PM2, and we now have a much better understanding of the extent to which dogs with PM1 and PM2 actually become ill.

The risk percentages has therefore been adjusted by the Expert Centre for Veterinary Genetics(ECVG) from the Utrecht University. However, please bear in mind that we are receiving few to no reports of dogs with polymyositis from various countries, even though such cases must exist. We believe that many veterinarians are still unfamiliar with this breed-specific disease and that, as a result, we are receiving too few reports.

These adjusted risk percentages are based on the assumption that 25% of sick animals have not been reported. Should a higher number of animals be reported as sick, the percentages may need to be adjusted upwards again.

General information

Polymyositis is a muscle disease in which inflammation of the muscles leads to problems with walking and swallowing. This variant has been identified in the Nederlandse Kooikerhondje. There are two DNA mutations involved in the development of polymyositis in this breed: PM1 and PM2. Only dogs that are homozygous(PM1/MM) or heterozygous(PM1/WM) for PM1 can develop this disease.

Dogs that are homozygous(PM1/MM) for the PM1 mutation have a very high risk of developing the disease. These dogs should not be born anymore and are not to be used in breeding. Dogs that are heterozygous(PM1/WM) for the PM1 mutation have a risk to developing the disease. If these dogs are also homozygous(PM2/MM) or heterozygous(PM2/WM) for PM2, the risk of developing the disease increases.

Dogs that have PM1/homozygous wildtype (PM1/WW) are at no risk of developing this type of polymyositis, regardless of their PM2 status.

The breeding objective must therefore be to ensure that, within a few years, the breeding population consists exclusively of PM1/WW dogs. That is the task breeders are facing. Based on the numerous tests, it has been calculated by ECVG that the population can handle this selection.

Estimated risks of developing polymyositis for the various PM1 and PM2 combinations

PM1/WW x PM2 (regardless of result)	0%	no risk of this type of PM
PM1/WM x PM2/WW	0,3%	low risk
PM1/WM x PM2/WM	0,8%	low to medium risk
PM1/WM x PM2/MM	1,9%	medium risk
PM1/MM x PM2/WW	16,9%	high risk
PM1/MM x PM2/WM	19%	very high risk
PM1/MM x PM2/MM	73,1%	very high risk

Based on ×/- 500 PM2 tests by ECVG 30/7/26

Most of the Kooikerhondje clubs have agreed that Fit2Breed(F2B) will give up to 2029 a breeding advice for all PM1/WM dogs. Breeders need to test the puppies in the litters, and retain or sell PM1-free animals as potential breeding stock. This therefore calls for specific combinations to minimize the risk of animals potentially falling ill. F2B will help with this. We will publish this as soon as F2B has been adjusted accordingly.

This was the best outcome we could negotiate with ECVG. The alternative would have been that F2B would stop proposing breeding combinations for PM1/WM bitches that also carry the PM2 mutation. At this stage, and based on the risks currently known, we considered that a step too far.

This concerns solely the breeding advice within the breeding tool F2B.
It is up to each country to decide whether to adjust breeding regulations regarding PM. We in the Netherlands have no intention of doing so. Breeding with animals that are PM1/MM is already prohibited here, and mating combinations involving PM1/WM animals are also not permitted.

Below the schedule of suitable combinations.

Parent 1		Parent 2
PM1/WM+PM2/WW	x	PM1/WW+ PM2/WW
PM1/WM+PM2/WM	x	PM1/WW+ PM2/WW
PM1/WM+PM2/MM	x	PM1/WW+ PM2/WW
PM1/WW+PM2/WW	x	PM1/WW of PM1/WM+ PM2/WW
PM1/WW+PM2/WM	x	PM1/WW regardless PM2 status
PM1/WW+PM2/MM	x	PM1/WW regardless PM2 status
PM1/WW- unkown	x	PM1/WW regardless PM2 status

Breeding advise for polymyositis in the Nederlandse Kooikerhondje in Fit2Breed

DNA tests for PM1 and PM2 are processed in F2B.
The first mutation (PM1) was discovered and was implemented in the breeding strategy and F2B. The second mutation (PM2) became recently available. The following breeding advice with regard to the two PM mutations will be implemented in F2B.

- PM1/MM dogs should not be bred with, irrespective of their PM2 status.

- PM1/WM+ PM2/WW : these dogs will receive a list of genetically recommended stud dogs. Including dogs that are not fully tested, but with an orange flag warning.

- PM1/WM + PM2/WM: until 2029, these dogs will still receive a list of genetically recommended stud dogs, but with an orange flag warning indicating a risk of producing puppies with an increased risk of developing Polymyositis. Strong recommendation: test puppies in the litter and retain PM1/WW dogs for breeding.

- PM1/WM + PM2/MM: until 2029, these dogs will still receive a list of genetically recommended stud dogs, but with an orange flag warning indicating a risk of producing puppies with an increased risk of developing Polymyositis. Strong recommendation: test puppies in the litter and retain PM1/WW dogs for breeding.

- Naturally, in both situations above, partners that are PM1/WW and PM2/WW are recommended. PM1/WW stud dogs without a PM2 result will also be included in the list, but with an orange flag warning and advise to do a PM2 test.

- PM1/WW bitches will get a list of genetically recommended stud dogs. Including dogs that are not fully tested, but with an orange flag warning.

Genetic risk for the development of polymyositis

Not all Kooikerhondjes that carry the PM1 and PM2 mutations will develop polymyositis themselves.

It is important to carefully monitor dogs with a high genetic risk, for example by regularly measuring the muscle enzyme CK at the veterinarian and by paying attention to signs of muscle pain. If polymyositis is suspected, the diagnosis can be confirmed by a muscle biopsy, possibly combined with an MRI scan. Treatment can then be started as early as possible, before a large portion of the muscles is affected. If you have questions regarding diagnosis and treatment of polymyositis, you can contact the Expertise centre of Genetics of the Faculty of Veterinary Medicine (gezondgefokt@uu.nl).

Clinical characteristics

The average age at which symptoms first appear is 3 years for dogs that are homozygous(PM1/MM) for the PM1 mutation and approximately 4.5 years for dogs that are heterozygous(PM1/WM) for the PM1 mutation.

The most noticeable symptoms are muscle pain, abnormal gait, general muscle weakness, and muscle stiffness. Swallowing difficulties may also occur. In addition, as the disease progresses, symptoms such as lethargy, weight loss, reduced endurance, and breathing problems may develop due to aspiration and the subsequent development of pneumonia.

For questions about diagnostics or treatment of this condition in the Kooikerhondje, you can contact the ECVG at Utrecht University: gezondgefokt@uu.nl

VHNK, 17 August 2026