

7. Summary

Determination of the refractive state of normophakic dogs and cats and pseudophakic dogs by retinoscopy

In this study, 398 normophakic dogs, 85 normophakic cats, and 21 pseudophakic dogs were examined by retinoscopy to assess optic refraction. All refractive measurements were performed in cycloplegia.

Normophakic dogs were divided according to use into home dogs, police dogs, hunting dogs, and sled dogs as well as according to head shape into dolicho-, meso-, and brachycephalic dogs.

On average, normophakic dogs showed a slightly hyperopic refraction. With increasing age, the average refraction is shifted towards myopia, which is caused by sclerotic changes of the lens nucleus.

Police dogs of this study without sclerotic changes of the lens nucleus are on average less hyperopic than home and hunting dogs. However, the average refraction abnormalities for all examined normophakic dogs regardless of usage type were so mild, that it can be assumed that they will not lead to visual restrictions.

The brachycephalic dogs of this study without sclerotic changes of the lens nucleus are on average more hyperopic than the examined dolichocephalic dogs. In addition are these brachycephalic dogs up to an age of three years on average more far-sighted than dolicho- or mesocephalic dogs. The results suggest, that dogs with these three different head shapes have a different axial length of the ocular bulb and / or a different corneal curvature. No studies have so far been performed to address this issue.

The examined normophakic cats are – similar to normophakic dogs – on average hyperopic. They also often develop short-sightedness at a higher age, which is the result of sclerotic changes of the lens nucleus.

Astigmatism and anisometropia with on average less than one diopter are common for both animal species of this study.

The examined pseudophakic dogs with a 41,5 dpt strong lens implanted into the capsular sack are on average hyperopic and therefore undercorrected. However, in a few dogs, myopia does occur. In total, around one half of the examined dogs were within one diopter short- or far-sighted and are therefore optimally corrected with an intraocular lens of this strength. About one fourth of the pseudophakic dogs are still so far undercorrected (+5 to +8 dpt) by a 41,5 dpt strong lens, that a visual impairment can be expected.

Astigmatism is more common with pseudophakic dogs than with normophakic dogs.

In summary it can be said, that the examined normophakic dogs and cats are on average almost normal sighted and that strong refractive errors are rare.