
Demographics of
Aggression
&
Exercise Bad for
Reactive Dogs?

PAGE 2

Canine Cognitive
Dysfunction
&
Coprophagy

PAGE 7

Owner vs
Veterinary
Perception of
Obesity

PAGE 12

The Keto Diet
for Canine
ADHD

PAGE 14

FOUR LEG NEWS



Behaviour in Rehab

Welcome to the Behaviour and Why you Care in Rehab issue of Four Leg News! A few very interesting, but not entirely 'rehabby' articles came across my desk and I simply wanted to share them. So the concept of this behaviour edition was formed.

We all spend lots of time with our clients and they ask us all sorts of questions, which aren't always rehab specific. I think it's good for all of us to know a little more about some behaviours across a broader spectrum. So dive into this issue to learn about Biting, Poop Eating, Owners acknowledgement of their dog's weight issues, Exercise and reactivity, Canine Dementia... and more! Read, learn, enjoy, and share!!

Until next time... Cheers!

Laurie Edge-Hughes, BScPT, MAnimSt (Animal Physiotherapy), CAFCI, CCRT

Demographics of Aggression

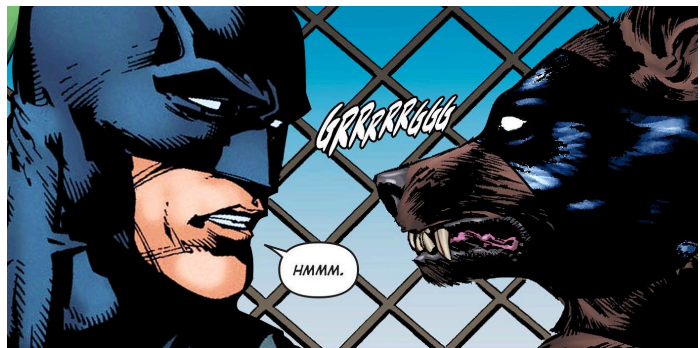
Guy, N.C., Luescher, S.E., Dohoo, E., et. al., *Demographic and aggressive characteristics of dogs in a general veterinary caseload* Applied Animal Behaviour Science, 74, pp. 15-28, 2001.

Veterinary behaviourists report that aggression due to the diagnostic category of “dominance” is the leading reason for referral. Specifically this type of aggression is directed toward persons known to the dog, especially members of the immediate household.

There are approximately 400,000 reported dog bites to people annually in the US. That is equivalent to slightly less than one reported dog bite per 100 dogs each year, and is considered to be a significant underestimation of the problem. Many bite injuries either receive no medical attention, or are treated by the family physician and are therefore not included in hospital statistics. Often bites are treated at home diluting the statistics further.

This survey was designed as the first phase of a larger project to identify characteristics, risk factors, and predictors of aggressive behaviour by dogs toward people living in the same household. A study population of owned dogs was developed which was not limited to licensed dogs, registered dogs, or dogs with a history of aggression. It is possible aggressive dogs might not be presented to veterinarians as frequently as non-aggressive dogs, or may be lost from the general veterinary caseload through relinquishment to shelters, abandonment, or euthanasia. The number of people reporting that their dog had bitten was substantial at 15.6%, and the results have produced a reasonable estimation of the composition of the general veterinary caseload, if not the general dog population.

The results indicated that as the potential



seriousness of the aggression increased (from growling to snapping to biting), the reported frequency of the behaviour decreased. More dogs growl than bite. The highest reported frequency of biting (24.6%) occurred in dogs less than 1 year of age. There were no significant associations between reproductive status and aggression in dogs less than 1 year of age.

Intact males, neutered females, and neutered males were tested against the lowest level of aggression which was reported in the intact female dogs. Neutered male dogs were the most likely to be reported as having bitten, with the odds of a report of bite in a neutered male dog being more than three times higher than that for an intact female dog.



Whether or not a dog was purebred did not significantly affect the reported frequency of biting although there were definite differences between recognized breeds. Results for Labrador and Golden Retrievers support their reputation as relatively non-aggressive adult dogs. The German Shepherd, which is often identified by the public as a dangerous breed, had a reported bite frequency which was essentially equivalent to that of the Golden Retriever. Although the severity of the bite incidents were not noted, the survey indicated that

owners of Springer Spaniels in maritime Canada are reporting the highest frequency of biting behaviour by their dogs, both as puppies and in adulthood.

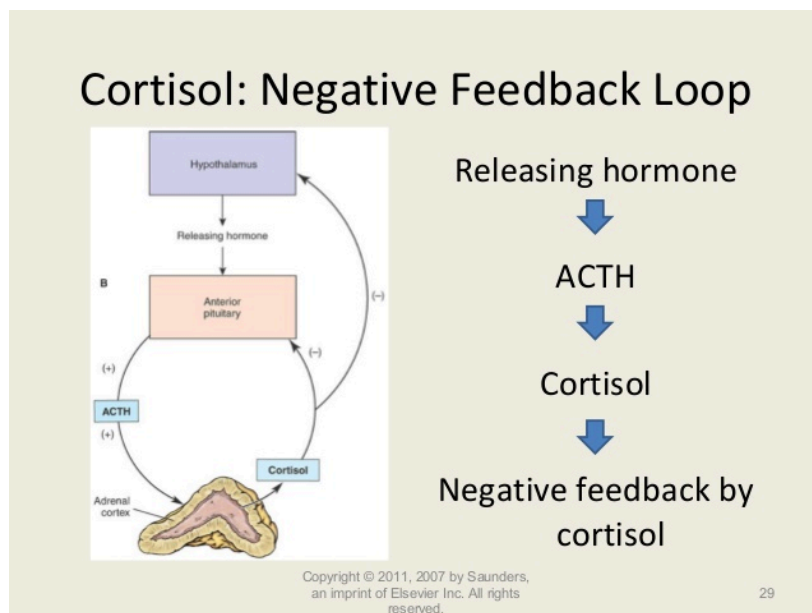
Relative to intact female dogs, neutered male dogs of at least 1 year of age were at the highest risk for having previously shown biting behaviour, followed by neutered female dogs, and intact males. In North America, elective neutering of young dogs is commonly recommended for reasons related to health, behaviour, and population control, but results indicate that the behavioural outcomes of these surgical procedures are worthy of further investigation.

Laurie’s thoughts: *I always find papers regarding bite statistics to be interesting. Mostly because they are so contrary to public opinion or propagated dogma. So, the bottom line in this article is that ‘de-sexing’ your dog has no real advantage in regards to minimizing dog bites... (not to say it doesn’t have other advantages, just that minimizing bite risk isn’t one of them.) So, if your client says, “We’re worried about Fido around the baby... we think we’ll get him neutered, will that help?” You can say “No. Get him neutered for other reasons (i.e. population control, reduced prostate issues, etc) when his growth plates are closed, and take him to behavioural training classes as well.”*

Exercise for Reactive Dogs?

Cooper, L., *Reactive dogs and exercise: Can modifying the daily exercise regime improve behaviour?* The International School for Canine Psychology and Behaviour, February 13 2017.

An exercise regime that provides an appropriate combination of walking and sniffing time will normally result in a happy, well stimulated dog. However, if a dog becomes highly aroused or stressed by the scent or movement of another dog, is the mere act of exposing such dogs to their reactivity triggers on a daily basis really providing these dogs with optimum well-being?



This literature review suggests that if emotional arousal involving adrenaline and cortisol are driving reactive behaviour the role of stress in reactivity should not be underestimated. Cortisol and adrenaline work as part of a negative feedback system to keep the body in balance. Distress can alter the normal functioning of the

feedback control especially if the body is not allowed a long recovery phase after the first exposure to distress and exhaustion.

Tests on stressed animals have revealed that the first release of adrenaline into the blood stream may dissipate within 15 minutes but the glucocorticoids that follow can take from two to six days to return to baseline. The hormone levels of constantly stressed dogs never return to baseline because of persistent exposure to their stress triggers.



Observations of canine body language have identified a number of indicators that show levels of excessive or unhealthy stress and suggest that hyper-energetic dogs are actually just stressed rather than exercise deficient. It has been suggested that certain activities, such as constant ball or Frisbee chasing for more than 30 minutes, can cause over arousal for several days if the dog is not allowed a recovery period. Over arousal causes stress; a stressed dog will eventually reach their threshold point much earlier and resort to reactivity.

A small scale observational research study was carried out with ten randomly selected dogs who were attending a small group workshop for reactive dogs. Owners were requested to implement a relaxation protocol with their dogs for three to six days immediately before attending the practical workshop and where possible to eliminate or substantially reduce the amount of exercise their dog received. All forms of chase and highly stimulating physical activities were to be eliminated completely for the duration of the programme and replaced with activities to provide mental stimulation and enrichment.

Apart from one owner, who continued with the same amount of exercise but changed the type and location, all owners reduced their dogs' exercise considerably, with five owners completely eliminating exercise for the duration of the programme. This result was

completely unexpected and may be one factor influencing the changes in body language observed by the owners. The observations show variable changes in the body language of all the dogs following completion of the relaxation programme. An 80% reduction in barking and an 88% reduction in lunging were recorded. Barking and lunging are the two behaviours that owners found most difficult to manage and were the most improved as a result of the changes to the exercise regime.

The dog who received no change to their daily exercise regime did receive the relaxation protocol and enrichment activities. Even though this dog was observed as having a calmer demeanour, it showed no changes in the body language it exhibited when confronted with the trigger stimulus.

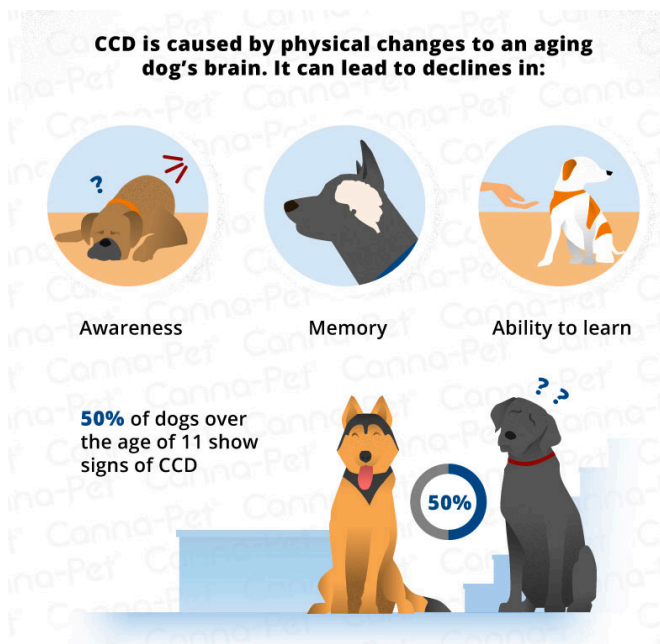
The dogs appeared more relaxed in the home environment and more aware and attentive of their owner. Seven of the dogs completing the relaxation programme for three or more days demonstrated improved listening skills. In addition, the three dogs completing the programme for four to six days showed a significant reduction in recovery time following a reactive outburst.

Despite the effects of other elements included in the relaxation programme not being measured, it can be concluded from the observational data that a change in the daily exercise regime is associated with a reduction in displays of reactive behaviour.

Some researchers have concluded that over exercise cannot only lead to heightened stress and reactivity but also to communication problems between dogs. Being constantly exposed on a daily basis to arousal triggers keeps the dog in a constant state of distress. If a walk does not allow the dog to be relaxed and take in all the sights and smells of the environment, then perhaps other methods of mental stimulation should be considered.

Reactive dogs are living for most of the time in a state of distress. Their bodies are reacting without thinking. Their ability to learn is severely disabled or non-existent.

Laurie's thoughts: *Wow! This is a very interesting study! So, really, what the reactive dogs need are calming activities. Not activities that ramp up adrenaline & cortisol! Certainly, we all know of reactive dogs. Now we can advise them against frisbee throwing, ball chasing, and general crazy antics. Personally, I'd love to see / hear of more fenced dog parks, where owners can schedule a time to walk their dog without other dogs or distractions). And perhaps now, we should also be advising those walks to be on leash, or calmer in some way as well.*



Canine Cognitive Dysfunction

Madari, A., Farbakova, J., Katina, S., et. al., Assessment of severity and progression of canine cognitive dysfunction syndrome using the CANine DEmentia scale Applied Animal Behaviour Science, 171, pp. 138-145, 2015.

Cognitive dysfunction syndrome (CDS) represents a group of symptoms related to the aging of the canine brain. These changes ultimately lead to a decline of memory

function and learning abilities, alteration of social interaction, impairment of normal housetraining, changes in sleep-wake cycle and general activity. The initial symptoms gradually worsen over time. Findings showed that CADES can be used as a predictor of conversion from normal ageing to mild, and from mild to moderate cognitive impairment.

The purpose of this study was to quantify cognitive decline in dogs. Owners of dogs aged 8 - 16.5 years were asked to complete a modified CANine DEmentia Scale (CADES) questionnaire. The questionnaire was adapted to a five point rating scale for easy evaluation of behaviour frequency; 0 points – abnormal behaviour of the dog was never observed, 2 points – abnormal behaviour of the dog was detected at least once within the last 6 months, 3 points – abnormal behaviour appeared at least once per month, 4 points – abnormal

behaviour was seen several times per month, 5 points – abnormal behaviour was observed several times a week.

The questionnaire was filled out by veterinarians during interviews with each dog owner.

The data collected from 215 tested CDS patients were classified into three stages – mild (early-stage), moderate (middle-stage) and severe (late- stage). Classification was based on the severity of behavioural changes, the number of affected domains and total scores. Important criteria for classification was the evaluation of the harmonious coexistence of man and dog which was defined as the absence of intolerable behaviours on the part of the animal, e.g. uncontrolled defecation or immitigable aggression, or other behaviours that significantly reduced the owner's quality of life.

56 dogs aged between 8 - 13 years were categorized as normal aging (NA) – pet owners usually did not notice any apparent changes of their dogs' behaviour.

80 dogs aged between 8 - 14 years were deemed to have mild cognitive impairment (MiCI) – pet owners usually did not realize any changes in pets' behaviour. After interview with veterinary clinician they could identify very mild changes of dog behaviour, particularly alterations in interaction with owners or other pets, reduction in activity during the day and increased activity at night, and rarely an inappropriate indoor elimination.

49 dogs aged from 8- 16.5 years were identified as having moderate cognitive impairment (MoCI) – pet owners could observe apparent behavioural changes such as undesirable indoor elimination (urination, defecation) or hyperactivity through the night. In this stage of disease, dogs required more care than ever before.

It is important to acknowledge that CDS is a rather complex disorder which involves a multitude of factors that influence the development and behavioural outcome of the disease. In a one year follow up study of dogs displaying normal ageing or mild cognitive impairment showed the progressive decline of cognitive state of 15 dogs. The results of these dogs who

participated in a six month and one year follow up assessment showed that social interactions and sleep–wake cycles were the domains most commonly affected.

This study has raised the question whether some specific therapeutic approaches could be used for each CDS subgroup or if the therapy would be “phenotype” specific. There is a hope that the future research of CDS will identify whether CDS represents single disease entity or it is rather an umbrella term for various disease phenotypes.

Laurie’s thoughts: *If you’re looking for find the Canine Dementia Scale online, just give it a google. Here’s one I found (no affiliation with the clinic providing the document by the way): <http://rng.org.au/wp-content/uploads/2014/09/CCDR-scale-revised.pdf>. This is a good thing for rehab professionals to know about. We tend to see a lot of senior / geriatric patients come through out doors, and perhaps being able to chat about signs of dementia is something we can add to the services we provide. As well, don’t miss the article I wrote on the topic that also discusses how ‘physiotherapy’ might help as well. <https://www.fourleg.com/media/RehabTheMind.pdf>.*

Coprophagy - you can’t stop it

Hart, H.L., Hart, L.A., Thigpen, A.P., Tran, A., Bain, M.J., *The paradox of canine conspecific coprophagy Veterinary Medicine and Science, 2018.*

Canine conspecific coprophagy, the tendency of some dogs to eat their own faeces or those of other dogs, seems paradoxical because dogs typically show an aversion to conspecific faeces.

Two hypotheses were considered for this study. One is that coprophagic dogs exhibit an abnormal behaviour stemming from one or more contributing causes such as weak aversion to faeces, a dietary deficiency, and association with a recognized compulsive behaviour. The predictions of this hypothesis were that: coprophagic dogs would be more difficult to houstrain than non-coprophagic dogs; coprophagic dogs would be fed a diet

markedly different from that of non-coprophagic dogs; and/or coprophagic dogs would be more likely than non-coprophagic dogs to show one or more compulsive behaviours, such as tail chasing.



The second hypothesis was that coprophagic dogs may be exhibiting a variant of an innate behavioural predisposition, possibly stemming from wolf ancestors that we hypothesize would have a tendency to keep the den resting area free of accumulating faeces. The behaviour would reduce the risk of parasitic infection from faeces just left alone.

The study addressed the topic of canine coprophagy with four objectives:

One: collect demographic data on the prevalence of conspecific stool eating by dogs

in the general population and examine factors such as gender, spaying or neutering, age, number of dogs in the household, type of food eaten, eating behaviour style, and breed.

The results of the data collected showed that first, the occurrence of coprophagy was distributed among all four gender-neuter groups, and age. Diet also appears not to be related to coprophagy. Additionally, there did not appear to be any correlation with stool eaters and other compulsive behaviours.

The variable most highly associated with coprophagy was the reported eating style, with 51.1% of coprophagic dogs referred to as greedy eaters compared with just 28.2% of non-coprophagic dogs.

Two: to look at the association of coprophagy with aversion, or absence of aversion, to conspecific faeces as indicated by ease or difficulty in house training.

Results show coprophagy does not reflect a weak aversion to faeces. 78% of dogs that were frequent stool eaters had been easily housetrained and remained well house trained.

Three: to establish the characteristics of stool eating especially with regard to age of dog stools eaten.

This survey showed that 82% of coprophagic dogs were described as consuming fresh stools, defined as being no more than 2 days old. A hypothesis is offered that coprophagy reflects a tendency inherited from the ancestral wolf to keep the den area free of faecal-borne intestinal parasites that might be deposited in the den resting area and would typically have parasite ova that are not initially infective, but could develop infective larvae after 2 days.

Four: to evaluate the therapeutic success of various behaviour modification approaches and the use of commercial products specifically marketed for treating stool eating.

The reported success rate of the commercial products and behaviour modification approaches was close to zero, indicating that the behaviour is not readily changed. The responses regarding the success of the 11 food additives or tablets specifically advertised for treatment of coprophagy, the overall success rate was reported to be less than 2%.

While the coprophagic syndrome seems to be medically harmless, it is very disturbing for many dog owners. One publication discussing this syndrome notes that some people find it so disgusting that the bond with their dog is irreparably damaged to the point where euthanasia is considered. To which I say, "It's just poop, people."

Laurie's thoughts: *Ugh! I have a poop-eater in my pack. We monitor her like a hawk when she goes outside, and I pick up poop regularly so as to avoid her poop-eating habit. I too find it icky... and we call her our 'gross little dog'. She doesn't care! Sadly, there is no cure!*

But, at least I know that there is no reason to try all of the purported 'cures' on the market. Just good to know, and information you can spout to others having the same issue whenever the topic comes up!!

Owner vs Veterinary Perception of Obesity

White, G.A., Hobson-West, P., Cobb, K., Craigon, J., et. al., *Canine obesity: is there a difference between veterinarian and owner perception?* Journal of Small Animal Practice, 52, pp. 622-626, 2011.

It is estimated that dog obesity levels are between 22-40% globally. Obesity predisposes dogs to serious health problems and obese dogs have a lifespan that is on average two years shorter.

For this study 117 questionnaires were answered by dog owners.

The dogs were split into two groups. Group 1 was labelled "overweight" and included those animals rated by the vet as having a Body Condition Score (BCS) of 3·5 or above (43%). Group 2 was labelled "non overweight" and included a small number of underweight animals.

The majority (79%) of owners reported that they had discussed the issue of their dog's weight at some point with a veterinary professional. Over two-thirds (69%) of respondents were able to provide a quantification of their dog's weight (in kgs or lbs) suggesting that the majority of dog owners in the sample population were at least familiar with the weight status of their dogs.

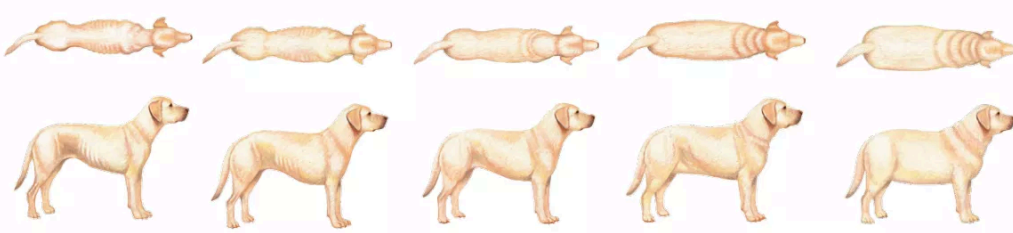
In order to evaluate whether the dog owners understood the weight figures (in the context of denoting a healthy or unhealthy status), the owner's description of their dog's weight were compared against the vet's BCS values provided for each animal. In order to provide a

more detailed picture, the initial two groups were further subdivided into “underweight”, “normal weight”, “overweight” or “very overweight” categories.

Results show that the proportion of agreement between vet-assessed condition scores and owner evaluations varied, depending on the category of BCS.

WHAT SHAPE IS YOUR DOG?

A little extra weight can be a **BIG PROBLEM**. Whether it's once a week or once a month, check your dog's body score regularly to make sure he's staying happy and healthy.

| BODY 1 SCORE | BODY 2 SCORE | BODY 3 SCORE | BODY 4 SCORE | BODY 5 SCORE |
|--|--|--|---|---|
| <p>VERY THIN < 5% body fat</p> <p>Ribs – Easily felt with no fat cover Tail Base – Bones are raised, no fat cover Side View – Severe abdominal tuck Overhead View – Accentuated hourglass shape</p> <p>20% below ideal body weight</p> | <p>UNDERWEIGHT 5-15% body fat</p> <p>Ribs – Easily felt with little fat cover Tail Base – Bones are raised with slight fat cover Side View – Abdominal tuck Overhead View – Marked hourglass shape</p> <p>10% below ideal body weight</p> | <p>IDEAL BODY WEIGHT 16-25% body fat</p> <p>Ribs – Easily felt with slight fat cover Tail Base – Some contour with slight fat cover Side View – Abdominal tuck Overhead View – Well-proportioned waist</p> <p>ideal body weight</p> | <p>OVERWEIGHT 26-35% body fat</p> <p>Ribs – Difficult to feel under moderate fat cover Tail Base – Some thickening, bones palpable under moderate fat cover Side View – No abdominal tuck Overhead View – Back is slightly broadened at waist</p> <p>10% above ideal body weight</p> | <p>OBESE > 35% body fat</p> <p>Ribs – Difficult to feel under thick fat cover Tail Base – Thickened and difficult to feel under thick fat cover Side View – No waist, fat hangs from abdomen Overhead View – Back is markedly broadened.</p> <p>20% above ideal body weight</p> |
|  | | | | |
| Consult your veterinarian! | Consult your veterinarian to see if you are underfeeding your dog. | Great job! Keep doing what you are doing. | Consult your veterinarian about the right nutrition for your dog and about ways to increase activity. | Extra weight can cause serious health problems for your dog. Consult your veterinarian about the right nutrition for your dog. |

For underweight dogs, the sample was divided equally between owners affirming the underweight status of their dogs or viewing the dog as healthy. Most dogs in this category had a BCS of 2-5 and were recovering from illness or mistreatment. Under these conditions, it is understandable that owners felt that the animal was in a healthy state, with broad agreement by the vet. Of note was the fact that all five owners who correctly identified their dogs as being underweight had discussed the dog’s weight with a vet at some point prior to partaking in the questionnaire.

In terms of normal weight dogs, veterinarians and owners agreed on about 80% of the dogs.

However, for dogs classed as overweight there was much greater variability in whether the owners agreed with the veterinary assessment: In this weight category, veterinarians and owners agreed only about 53% of the time. 39% of owners thought that their dog was of an acceptable or normal weight and one owner felt that the dog needed to *put on* weight!

Unfortunately, this study implies that about half the time the battle will be to make owners believe their pet is overweight, before any recommendation for weight loss can be considered viable.

Laurie's thoughts: *I think the last line of this article is most impactful, and sums it all up right there. Half of the time, your number one goal will be to get the owner to realize that their dog is overweight. To discuss food, exercise, treats, etc, will be useless if the owner doesn't even believe that their dog is overweight. So really, what we need to do is come up with an educational program & message about how to tell if your dog is overweight! Those Purina Scales are likely a good place to start... but we likely have to engage in a more in-depth conversation if we want real change to occur!!*

Keto Diet for ADHD

Rowena, M. A., Law, T.H., Davies, E., Zanghi, B., Pan, Y., Volk, H.A., *Effects of a ketogenic diet on ADHD-like behavior in dogs with idiopathic epilepsy* Epilepsy & Behavior, vol 55, pp. 62-68, 2016.

Epilepsy is a common chronic neurological disorder in dogs as well as in humans. The link between seizure activity and ADHD-like behaviours is also not limited to human epilepsy. Parallels have been drawn between behavioural disorders in humans and canines, such as separation anxiety and obsessive-compulsive disorder. Parallels between childhood ADHD and canine activity and attention related behavioural problems have been considered.

In a single-breed study of Lagotto Romagnolo dogs with or without a history of benign familial juvenile epilepsy (BFJE) where dogs often experience spontaneous seizure remission before 13 weeks of age), dogs with BFJE showed significantly higher scores on the behavioural factors 'inattention' and 'excitability/impulsivity' than did the control group without BFJE. These behavioural changes were observed after at least four years following the last observed seizure, which demonstrates that behavioural co-morbidities can be present in the absence of seizure activity.

External factors associated with diet and the dog's lifestyle may have an impact on seizure activity and behaviour. Diet-induced behavioural modifications in dogs have been reported in peer-reviewed literature and anecdotal notes. For example, a low protein diet has been shown to reduce certain types of aggression in dogs, and supplementation of caseozepine or the proportion of protein in a given diet may reduce anxiety-related behaviour. The ketogenic diet (KD), which is a high-fat, low-protein, and low-carbohydrate diet used in the treatment of intractable human epilepsy, also appears to improve symptoms of ADHD in individuals with both disorders in humans. The KD has also been found to decrease ADHD symptoms in both adults and children. This improvement in ADHD symptoms appears to be independent of seizure control, with behaviour found to improve even if seizure control is not obtained.

The present study was a dietary trial comparing the effects of an MCT (medium chain triglycerides) diet with a standardized placebo diet on behaviour in canine epilepsy. Dogs were fed either the MCTD or the placebo diet for 3 months followed directly by a subsequent respective switch of diet for a further 3 months.

Dogs were restricted to consumption of only study food.

At the end of each three-month period owners were asked to complete a behavioural questionnaire to report on their dog's behaviour during that period.

Behaviours observed in dogs with epilepsy resemble those seen in humans and rodent models of epilepsy, with relatively high levels of excitability and chasing behaviour and relatively low levels of trainability. The MCTD significantly reduced one of these behavioural factors, 'chasing' and reduced stranger-directed fear and was also associated with an increase in trainability; however, this difference was not significant. Even within the MCTD period, trainability did not increase to 'normal levels'.

Laurie's thoughts: *Wow... plenty of interesting linkages in here. I was not aware of the link between ADHD and seizures. As well, the fact that the ketogenic diet affected behavioural factors is another interesting link being made. I've heard of this diet being promoted for humans, but never before for dogs. My 'caution' flag goes up however, in wondering if the diet provides enough other nutrients for the dogs in question... Another research study needed it would seem!!*



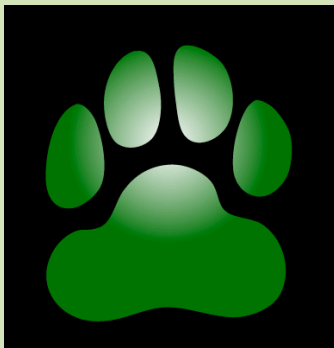
FourLegRehabInc

CANINE REHAB EDUCATIONAL RESOURCES

See what else is available to learn:

Visit www.fourleg.com

Drop me a line! Send me your questions!



Four Leg Rehab Inc

PO Box 1581,
Cochrane, AB T4C 1B5
Canada

Laurie@Fourleg.com