

# Common Injuries and Ailments in Racing Greyhounds

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Muscle injuries are the most common problem which cause lay off or down time from training and racing in a greyhound. However, there are a number of other conditions and ailments that can cause loss of training days, less than optimum performance and which can be difficult to recognise and manage.

In these notes, I focus on the conditions and ailments, other than direct musculo-skeletal injuries, that often affect the greyhound athlete. In my own experience gained from working with greyhounds, I provide an overview of the disease or ailment, as well as handy hints on their recognition and management. It is by no means an exhaustive review, but it includes the important signs and simple therapy and management of these relatively common problems. Although, in many cases, only one greyhound in a kennel may be affected, these common conditions can adversely affect performance and the long term racing career of the greyhound. The conditions are presented in alphabetical order, rather than incidence or severity.

## ACIDOSIS

Acidosis is a term used to describe soreness and swelling ('blowing up') of the backline and hind limb muscles following sprint exercise and racing in an otherwise healthy greyhound. It is a natural, transient condition that is related to fast, anaerobic (oxygen debt) exercise in all greyhound athletes. The term 'acute acidosis' is used to describe the more severe form of muscle dissolution or 'meltdown' and cramp-like symptoms that are associated with Exertional Rhabdomyolysis (ER) in a severely stressed or dehydrated greyhound following an overly strenuous trial, course or race.

### Predisposing Causes

The rapid build-up of L-lactic acid is a result of low oxygen supply to rapidly contracting muscles of a galloping greyhound, and is more likely to occur if the greyhound is anaemic, dehydrated or not fit enough for the speed and distance of the race, or runs an extra 'lap' after a trial or race. It is not the underlying cause of cramping, although 'cramped' muscles show typical symptoms because the accumulated lactic acid is retained in the contracted muscle tissue and cannot disperse into the surrounding tissue or blood. Anaemic greyhounds are prone to acidosis because of poor oxygen delivery to contracting muscles, as are dehydrated animals where blood perfusion and muscle oxygenation is impaired at sprint speeds.

### Typical Signs

Greyhounds exhibit swelling, soreness and discomfort of the backline and rump muscles within minutes to up to 24 hours after the race as a result of water being transferred by osmotic gradient into the highly acidic muscle environment. In the acute form associated with Hypoxic or Exertional Rhabdomyolysis, the muscle cells swell and rupture, causing severe muscle damage and escape of muscle enzymes and myoglobin pigment into the blood and overflow of myoglobin into the urine, to produce 'port wine' coloured urine and severe dehydration. ER causes extreme pain, loss of muscle mass due to severe muscle damage and dissolution, and can be followed by racing under extreme hot conditions, a concurrent high temperature in a sick greyhound that is raced, dehydration and acute electrolyte disturbances, particularly the chronic depletion of blood and muscle potassium levels due to chronic muscle soreness, barking, panting and the use of high doses of urinary alkalinising products.

***Handy Hint** If the symptoms of 'acidosis' persist for more than 12 hours, and are associated with muscle 'meltdown', severe weight loss, listlessness, collapse, dehydration and passing of dark urine (muscle pigment excretion), the greyhound must be referred to a veterinarian for emergency fluid and electrolyte replacement and other medication.*

### Management

All fit and healthy greyhounds suffer a mild acidosis during the final stages of the race, but where greyhounds are not prepared adequately by sprint training, the accumulation of lactic acid occurs earlier and to a greater degree in an anaerobic environment of rapidly contracting muscles. Ensuring the greyhound is provided with a balanced diet, including supplementation with 100 IU of vitamin E daily, avoiding anaemia and maintaining adequate hydration and electrolyte balance will help reduce the risk in an otherwise fit greyhound. Walking the greyhound for 10 minutes after sprint exercise and racing where possible to dissipate lactic acid out of the muscle environment is helpful in avoiding the mild condition.

***Handy Hint** Supplementing with citrate based muscle 'buffers' in the feed or over the tongue, can be helpful in neutralising excess blood and muscle lactic acid accumulated after sprint exercise, but excess amounts must be avoided as elevated blood alkalinity can result in fluid and electrolyte shifts and predispose to cramping and poor performance if potassium salt is leached out in the urine.*

## ANAEMIA

Anaemia is another condition feared by trainers of racing greyhounds. Anaemia is not a 'disease' as such, but a condition resulting from lower than required circulating red cells and haemoglobin, often related to diet, blood loss due to heavy worms and/or flea burdens and lack of sprint exercise to stimulate red blood cell synthesis.

### **Predisposing Causes**

The most common cause is excessive blood loss due to worms and/or flea burdens, feeding diets low in iron and nutrients required for red blood cell synthesis, particularly white meats (chicken, fish and tripe), low grade infections and stress related bone marrow suppression due to an extended time in training.

### **Typical Signs**

A dull, rough coat, pale gums and eye membranes, lack of stamina and distress by panting for extended periods after exercise, are signs associated with anaemia and a 'poor' red cell count or Packed Cell Volume (PCV).

**Handy Hint** *All these signs can be related to a number of predisposing causes, such as worms/flea burdens, poor diet and lack of sprint training, rather than a single severe underlying cause, although heavy hookworm burdens and low dietary iron intake relative to needs, can cause a chronic form of anaemia that saps speed and stamina without outward signs in the coat or loss of condition.*

Anaemia can be diagnosed by the typical symptoms and confirmed by reduced numbers of red cells, haemoglobin and PCV in a blood cell count in severe cases, with follow-up stool tests for worm infestation, checking for flea burdens and dietary evaluations for adequacy of iron in the diet.

### **Management**

Simply supplementing with an iron tonic is not the only way to avoid anaemia or correct the condition, although in diets low or inadequate in iron, obviously supplementation with iron and blood forming nutrients can help avoid the chronic form. Rigorous worm control, confirmed by stool tests for worm eggs, flea eradication during seasonal increases in flea populations by flea treatment and kennel/bedding control, are all important considerations to reduce the risk of anaemia in racing greyhounds. Worming at 4-6 week intervals, and stool testing for worm eggs at 12 week intervals, is useful in controlling internal parasitic burdens, combined with strict hygiene in runs and turn-out areas to reduce the risk of recontamination. A reduction of slow speed walking distance and introducing twice weekly sprint exercise to stimulate red cell synthesis, combined with a well balanced diet and supplementation with iron and blood forming nutrients, especially on white meat based diets, will assist in preventing anaemia and recovery from the condition.

**Handy Hint** *The racing greyhound as a breed of dog, has a higher PCV than other breeds, and when fit for racing, the PCV should be greater than 60%, but not greater than 65%, as this is associated with haemo-concentration due to excitement or dehydration. Greyhounds with a PCV of less than 55% are usually not well prepared by adequate sprint exercise. Sprint speed stimulates red cell synthesis and hand slips/trials over 100-150 metres twice weekly in training will help to improve the PCV in a greyhound free of parasites and provided with an adequate diet.*

## **ALLERGIES**

Allergic reactions in racing greyhounds can be many and varied. Allergic reactions include airway allergy (asthma), skin allergies (contact or food related) and gastro-intestinal allergies and diarrhoea, which are commonly due to red meat or sudden changes in dry foods, as well as flea bite allergies that affect the skin. Besides flea related allergy, skin allergy is usually caused by diet, contact with irritating or allergy inducing chemicals in the kennel and webbing allergy triggered by certain types of cut grass in walking areas or turn-out pens. The most common gastro-intestinal allergy is a sensitivity to red meat in the diet, which appears to affect individuals in some bloodlines of German Shepherds and racing greyhounds.

### **Predisposing Causes**

About 3% of greyhounds appear to be sensitive to large amounts of any form of red meat, and up to 15% in my experience, are allergic to horse meat when it is provided as the base for a diet. Sudden changes from beef to low fat horse meat appear to trigger the most frequent form of digestive allergy. I will discuss this allergy as I have encountered it a number of times in puppies, greyhounds in training and retired greyhounds.

### **Typical Symptoms**

The animals develop low grade diarrhoea, with poorly formed stools and gut discomfort when emptying out. It is a form of non-infective gastro-enteritis, and if the sensitivity to red meat is not identified, affected greyhounds will lose weight and performance due to energy and protein malabsorption. Check the animal's temperature – if it is below 38.4°C, it is unlikely to be an infective cause. The stools also often contain chunks of poorly digested red meat. The allergy rarely causes vomiting as it appears to be a lower small intestine allergy – the gut has increased movement and motility is apparent just before emptying out.

### **Management**

Removing the raw red meat, especially horse meat, from the diet and replacing it with chicken or fish (with 10% added fat as lard (rendered pork fat – not dripping) or suet (sheep kidney fat) will often control the allergy in 3-4 days. If the greyhound does not respond within 5-7 days, I normally recommend a low allergy diet of 700 grams of boiled mutton flaps and 300 grams of boiled pasta or rice for 7-10 days.

**Handy Hint** *If chicken or fish are used to replace all the red meat, add a supplement of 20-30 mg of iron daily, as these meats only have 25% of the iron content as compared to red meat. If iron is not supplemented, many greyhounds will develop symptoms of anaemia with 2-3 weeks and race performance and stamina can be reduced.*

## **ASTHMA AND EXERCISE –INDUCED BRONCHO-CONSTRICTION**

Until recently, asthma-like airway constriction was not recognised as a relatively common condition in greyhounds. It is most commonly associated with broncho-constriction after sprint exercise and is referred to as Exercise-Induced

Broncho-constriction or EIB. The symptoms of broncho-constriction with wheezing also occur in human sprinters after exercise.

It has recently been estimated that up to 20% of greyhounds are susceptible to the effects of asthma and the condition is common in some bloodlines and littermates, suggesting an inherited link if lower airway receptors are challenged by trigger factors. Indeed, for many years, a Basenji-Greyhound crossbreed animal model has been used to research the predisposing causes of human asthma and its response to treatment. It appears that greyhounds have non-covered allergy receptors in their airways similar to the human chronic asthmatics.

#### **Predisposing Causes**

Like the condition in humans, asthma in a greyhound is often related to the inhalation of pollen, irritating fumes, such as liniments, allergic dust particulates, intake of large volumes of cold air during late night racing, and poor ventilation and humidity in the kennel environment. It can also be triggered by reactive and chronic tonsillitis in some greyhounds. EIB is a specific condition that occurs after strenuous exercise, and may be exacerbated by inhalation of cold air during late night racing.

#### **Typical Signs**

The symptoms of asthma associated with broncho-constriction are caused by abnormal narrowing of the lung airways and reduced ventilation capacity, resulting in wheezing, choking and a moist, unproductive cough or 'husk' after fast exercise, which can last for up to 1-2 hours in severe cases. Obviously, airway shutdown (broncho-constriction) reduces speed and performance in the affected greyhound with affected greyhounds panting deeply and gasping for air after fast exercise.

***Handy Hint** Many trainers associate asthma symptoms with 'sand in the throat' inhaled during a race, or 'fur in the throat' if the greyhound savages the lure in the catching area after a race, but if the symptoms persist after more than 10 minutes following exercise, then asthma or EIB should be suspected. A 'biley throat' is also a common misconception in chronic sufferers.*

#### **Diagnosis**

Asthma and EIB is best diagnosed by response to human asthma medication, such as a salbutamol (Ventolin®) 'puffer', administered when the animal is showing typical symptoms. When given 10-15 minutes after a race, a broncho-dilator will relieve the symptoms within 2-3 minutes.

***Handy Hint** Using a foam cup, punch the delivery shute of the puffer through the bottom and place the cup over the animal's nose. Give 2-3 puffs as the animal inhales. If the symptoms are due to EIB, it will relieve wheezing, coughing and airway distress within a couple of minutes. This can be combined with careful stethoscope examination of windpipe and lungs before and after the medication. A short handslip over 50-70 metres given 10-15 minutes after medication should not trigger asthma symptoms. Do not perform this test early in the morning or on very cold days, as inhaled cold air can damage the dilated lower airways and lead to increased mucus secretion.*

#### **Long Term Management**

Administration of a broncho-dilator is difficult in a racing greyhound because of drug medication rules, but in my experience, medication with inhaled salbutamol prior to exercise daily for 7-10 days, and withdrawing 3 days before racing, can help manage the condition. Do not use cortisone based broncho-dilators unless under veterinary supervision. Adequate warm-up by walking before galloping, avoiding galloping into near or sub-zero air. In the management of allergic asthma, I have found that spraying the kennel for dust mites and providing low humidity air conditioning for ventilation will assist greatly to control.

## **BALD THIGH SYNDROME (BTS)**

BTS is a relatively common problem, particularly in older male racing greyhounds, with thinning and symmetrical loss of hair covering the sides of the hind limbs (thighs), chest and belly over a 4-6 week period, often after returning to racing after a rest period. It affects up to 25% of racing greyhounds in long term training. Some kennels have a higher incidence which may reflect on training methods and physical stress, the diet or environmental conditions.

#### **Predisposing Causes**

The exact cause has not been determined, but the symptoms are similar to those of either low thyroid activity and chronic dehydration, or stress related due to the continued production or over-secretion of cortisone by the adrenal gland.

***Handy Hint** The symptoms should not be confused with hair loss by abrasive concrete floors or hessian (burlap) bags used as a bed mattress cover, which can also shear off hair on the thighs as hair becomes trapped in the open weave. However, in this case, it is normally more pronounced on one side and the skin is smooth 'shaven' rather than wrinkled and dry in appearance.*

#### **Typical Signs**

In most cases, the affected greyhound appears healthy, eats well and is bright and alert in early training. However, over a 4-6 week period, the skin develops a wrinkled, leather-like appearance and appears to darken as the hair thins out on the thighs, elbows and chest. Often the greyhound loses weight and develops a chronic dehydration over an extended period in training, with symptoms of 'training off' and loss of speed and stamina after 4-6 consecutive races, losing interest in chasing and running back in the field. If the greyhound is given a lay-off for 2-3 weeks, it will regain form or 2-3 races, then lose performance again.

## **Management**

Often a 3-4 week lay-up from training will enable the hair to regrow, combined with increased intervals between racing once the greyhound returns to training, will help reduce stress. Although long term courses of thyroid hormone (thyroxine 200 ug tablets) is recommended under veterinary supervision, it must be given in conjunction with potassium salts and increased fluid to soak the dry feed to counteract dehydration for best results. I always suggest a reduction in the distance of walking to 1-2 km per day, with sprints over 200 metres twice weekly between races at 10-14 day intervals to reduce the physical stress. It is best to keep the greyhound 'fresh but fit' between races.

## **BRONCHITIS**

Bronchitis and trachea-bronchitis is distinct condition to asthma and EIB. It can develop as a chronic problem in some greyhounds, with increased mucus secretion in the windpipe bronchi and lower airways.

### **Predisposing Causes**

Although respiratory infections with viruses and associated microbes (eg Kennel Cough Complex) can cause increased airway mucus during recovery, in my experience, galloping greyhounds into cold, moist air early in the morning or misty night air, combining with damp 'mouldy' kennels during wet weather is the most common underlying cause. Infection with the tracheal worm (*Filaroides osleri*) may also cause similar signs, with coughing after exercise and increased mucus or 'phlegm' in the throat. In some greyhounds, feeding milk to dampen the dry food can also result in increased airway mucus and 'phlegm in the throat'. A survey of kennels in Sydney indicated that the same mould particles (*Aspergillus* spp) found on the bedding and walls, were isolated from the airway mucus of greyhounds with a history of tracheo-bronchitis, especially under crowded kennel conditions. Tracheo-bronchitis is often related to a combination of inhaled mould and *Bordetella bronchiseptica* organisms, particularly after kennel cough, which causes persistent airway inflammation and excess mucus secretion. I also consider it as an airway sensitivity and low grade asthma in some greyhounds, without symptoms of wheezing and coughing after exercise. The symptoms improve with broncho-dilator therapy in about 30% of cases.

### **Signs**

A deep, moist and 'husky' cough, often with 'phlegm in the throat', lasting for a few days to a chronic form over months, but not typical of EIB. In chronic, more severe cases, strands of mucus may be expelled from the mouth and cling to the left side of the body as a greyhound races.

## **Management**

A thorough examination and scoping of the windpipe by a veterinarian should be carried out in persistent cases, with airway swabs collected for culture of fungi and *Bordetella* spp. Stool samples should be collected to check for eggs of the tracheal worm in greyhounds with a cough and streaming mucus only after a gallop.

Management under veterinary supervision is recommendation, because response to broncho-dilators can rule out allergy-induced asthma and EIB. Swabs of the mucus to check for Tracheal worm eggs and concurrent throat and tracheal infection should be taken, with targeted antibiotic medication for airway infection where necessary, including fungal specific drugs and mucolytic therapy to assist airway clearance.

Avoiding early morning gallops into cold, moist air is very helpful and giving a 7-10 day course of asthma medication is useful. Cough medications are generally useless. Avoid strong muscle liniments (Oil of Wintergreen) in enclosed kennels - wipe off all residues with a damp cloth after massaging.

**Handy Hint** *I always suggest that the kennel be steam-cleaned to remove moulds and kept as dry as possible, even by installing reverse cycle warming air conditioning that dries the air and environment if a number of greyhounds are affected. Place a bowl of water in the kennel aisle to allow the air conditioning to evaporate a controlled amount of moisture, otherwise, in my experience, warm reverse cycle air conditioning can dry the air excessively and increase to risk of airway infection due to an over-dehydrated respiratory system.*

## **BLADDER SHUT DOWN**

This is a common term for Post Racing Dysuria, or what, one trainer described as "me dog can't pee after a gallop". It only affects male greyhounds and is most common in young, highly strung dogs following the stress of travelling or racing. The condition can be very frustrating for post-race urine collection.

### **Predisposing Causes**

It appears to be triggered by excitement, anxiety or physical stress, which can affect the nervous control of urination and opening the bladder valve (sphincter), combined with narrowing the urethra as well.

### **Signs**

Three stages of severity have been observed, with the lesser form, which develops from 2-12 hours after racing, causing a delay in urine flow for 10-30 seconds producing a thin stream of urine. As the condition increases in severity, it can last for 2-48 hours after racing, with a delay of 30 seconds or more before the greyhound passes a thin, pulsing stream of urine. The bladder often fills faster than the greyhound can pass the urine, leading to an extended bladder and discomfort.

The most severe form, which can occur in very stressed or excitable young dogs, causes a complete inability to pass urine despite frequent attempts and the bladder becomes distended and very uncomfortable. If not recognised early, it can lead to kidney damage due to increased urinary fluid pressure within the kidneys.

## **Management**

I have evidence that it is a bloodline related stress response in a bloodline of very excitable greyhounds where all 5 dogs in a litter of 8 pups were affected to varying degrees. Generally, the less severe, early stage can be avoided by reducing stress during traveling and in the pre-race/trial period, with most dogs reverting to normal urination after 6-12 hours. However, where the bladder becomes distended, then drug medication to relax the dogs (usually acepromazine is effective) and the bladder may have to be catheterised to drain it for 48 hours after a race in a severe case, with the catheter left indwelling to prevent bladder distension and kidney damage due to back flow pressure. Do not use kidney 'tonics' or mild diuretics to help an affected greyhound pass urine.

I usually recommend that the greyhound be kennelled in a quiet area for 24 hours after racing, as this helps to reduce the incidence in susceptible young dogs.

## **CHILBLAINS**

Chilblains in greyhounds can develop on the edges of the ears under cold conditions, especially under conditions of 'dry' cold and a high wind chill factor in greyhounds housed in poorly insulated kennels and outside turn-outyards.

### **Predisposing Causes**

The edges of the ears are chilled excessively to cause a 'frost bite' like condition, which causes devitalisation of the skin and underlying cartilage.

### **Signs**

The first signs are a loss of hair around the borders of the ears (not due to fleas which are a hot weather problem), and drying, cracking and weeping of the skin. Many greyhounds rub or flap their ears on walls, their front legs to relieve the discomfort, which causes laceration and bleeding of the devitalised skin border.

### **Management**

Under cold, icy weather, I recommend that ears be protected and kept warm by stretching a football sock or stocking over the head and neck to pin the ears close to the body when out walking or in turn-out pens.

***Handy Hint:** In mild cases, wrap the ears to the head with a layer of kitchen film and apply a warm (not hot) moist towel over the ears for 1-2 minutes. The kitchen film provides a moisture barrier to prevent the ears becoming too moist and risking infection.*

Ulcerated edges respond to antibiotic creams and protection of the ears by fitting a plastic bucket to the greyhound's neck to prevent it rubbing the ears as they heal. Under cold conditions, move greyhounds indoors and avoid walking them without the football sock sleeve. Take it off after a warm-up prior to galloping.

## **COLITIS – a brief**

There are a number of causes of irritated lower intestine, but I find the most common trigger is a sudden change to horse meat (Red Meat Allergy), a change in the brand of dry food with high protein, or too much fat added to help manage dehydration. Obviously lower bowel infections can also cause diarrhoea. Often first signs are frequent squatting and straining to pass small amounts of soft dropping covered in a film of mucus – check for hookworm if the droppings are dark as well. The greyhound appears normal and does not have a temperature rise. I suggest that you reconsider any dietary change and cut back to introduce new changes over a 7-10 day period – even when changing to a new brand or formulation of dry food. If the droppings do not improve – consult a veterinarian. A long term course of sulphonamide medication may be helpful in chronic cases.

## **CORNEAL ULCERATION**

I have included corneal ulceration only because it is normally well advanced by the time the greyhound is brought in for veterinary treatment. It affects the clear area at the front of the eyeball, and if not recognised and treated promptly, it can cause permanent scarring and loss of full vision. (See also Pannus)

### **Causes**

The most common cause appears to be sand particles being flicked up into the eyes from a sand track when racing. In puppies, it often results from running through long grass in outside runs.

### **Typical Symptoms**

Initially, the reaction is consistent to a foreign body in the eye – excess tear secretion, frequent blinking, inflammation of the conjunctiva and severe eye discomfort. Many greyhounds attempt to rub their eyes on bedding, walls or with their front limbs. Within hours, a pink or white 'film' develops over the cornea as infection and moisture invades the layers of the cornea.

### **Management**

It is an emergency condition – don't leave it to see what happens or if it will get better. There are some human eye ointments containing antiseptics that can help control the initial infection and repel moisture to delay the spread of the ulceration, but in most cases, prompt veterinary treatment with irrigation and antibiotics is the best therapy.

***Handy Hint** It is very helpful, as a routine, to determine the position, size and severity of the ulceration by instilling fluorescent drops into the affected eye. This will assist in choice and frequency of therapy – but aggressive therapy is usually warranted, even for relatively small lacerations to avoid permanent scarring. In severe cases, suturing of the eyelids together is recommended.*

As greyhounds are often challenged by high microbial contamination in the kennel environment, and flies in the summer time that are attracted to the 'moist' weeping eye, ensuring the kennel environment is thoroughly cleaned, bedding changed (avoid straw) and flies controlled by baits or screens, are all helpful in reducing the risk of serious ulceration. Attaching a snugly fitting plastic bucket to the collar, with fly screen stretched across the front will help reduce fly worry and rubbing as a greyhound recovers. Remove every 2-3 hours during the day to allow the animal to drink.

## CRAMPING

Cramping is a similar condition to 'tying up' (set fast) in horses, is the most common metabolic related muscle condition in racing greyhounds, but the causes in greyhounds are different in many ways. In greyhounds it is considered to be a multi-factorial condition, with at least 5 predisposing causes. The major problem with cramping, or muscle seizure in severe cases, is that the common sub-clinical form is not recognised initially and more severe symptoms and muscle damage occurs in subsequent sprint-ups or races.

### Predisposing causes

Although cramping is relatively common in racing greyhounds, it can be triggered by dietary excess of carbohydrates, inadequacies in calcium in the diet or mobilisation within the muscle cells, lack of adequate fitness, travelling and pre-race stress conditions, a chronic dehydration state with potassium deficiency, cold conditions causing reduced muscle blood flow during late night racing, (up to 70% of cramping occurs in the last 3 races on a cold night) a nervous disposition, and in my experience, a possible genetic predisposition in family bloodlines in bitches. The association of cramping and acidosis is tenuous, because the symptoms of acidosis with muscle swelling and soreness, develop because the muscles are contracted and accumulated L-lactic acid cannot be dissipated. Severe cramping can also occur in greyhounds suffering Exercise-Induced Malignant Hyperthermia and Exertional Rhabdomyolysis. Poor circulation in a muscle group in the hind limbs following a severe muscle bruising or a tear, has been linked to an increase in cramping in the specific muscles when racing. Even too much caffeine can induce cramping in greyhounds!

### Typical Signs

The most common form which I regularly investigate is subclinical cramping, where a greyhound reduces speed and slows down at the end of a race, without developing muscle lock-up or difficulty in walking. Often the muscles along the backline and driving muscles of the hind limbs, including the right gracilis on tracks with restricted small radius corners, are knotted up for 15-30 seconds after a race. Usually, by the time the animal is walked off the track back to the kennels or wash bay, the symptoms disappear and are not noticed.

**Handy Hint** Check every greyhound that fails to finish strongly or has a form reversal in the catching area by pressing along the backline, gluteals, biceps femoris, semitendinosus and right gracilis muscle for evidence of hardness, discomfort and knotting before the greyhound is walked off the track. Also check for a post-exercise cough as a symptom of EIB.

Obviously, mild and severe cramping affects the gait, and in acute conditions, the animal will finish a race running on three legs, often dragging it out behind up the home straight. The affected muscles are sore, knotted and may be 'colder' to the touch when compared to surrounding muscles after a sprint or race.

**Note:** Severe stress-induced cramping or Exertional Rhabdomyolysis, where the muscles virtually melt off the animal, with severe distress, weight loss and dehydration, can be initially accompanied by large areas of cramped muscles.– seek veterinary advice immediately as it can be fatal, or result in long a long period of recovery back to racing, often with long term loss of speed.

**Handy Hint** Although the signs of sub-clinical cramping can usually be identified at the end of a race in the catching area, if a greyhound consistently fails to finish, a blood sample taken after 6 hours following a race can be used to determine an elevated level of the muscle enzyme Creatine Kinase (CK) above 400 IU/L, without a substantial elevation of Aspartate AminoTransferase (AST) enzyme, which begins to increase above 100 IU after 12 hours.

### Initial Treatment

Careful stretching of the muscles, light massage and short walks to assist metabolite removal is helpful as a first aid measure for cramped muscle. However, do not force a greyhound suffering from a severe cramping episode to walk, as acute muscle damage can result. Seek immediate veterinary advice and start intravenous fluids and electrolytes to help avoid Exertional Rhabdomyolysis.

### Management

Because cramping is a metabolically related condition in most cases and has a multi-factorial cause, attention to diet and supplementation must be considered, as well as settling a nervous disposition and adopting adequate walking as a pre-sprinting warm-up.

### Dietary Influences

1. Avoid feeding more than 2 slices of bread/toast or 1 cupful of human grain based processed human breakfast cereal as a carbohydrate feed – especially to bitches with a history of repeated cramping. I prefer to remove all bread and feed a high protein, high fat dry food instead. Do not give a large feed of carbohydrates to a bitch with a history of cramping within 24 hours prior to a race. Lightly boiled pasta (1 1/2 cupsful) made from durum wheat provides a slow release form of carbohydrates which can help minimise the risk of cramping in some greyhounds.
2. Supplement with lard, suet or fatty meat trimmings to increase the fat level to 12-15% of the diet (usually 60-90g (2-3 ozs) is adequate to help and provide 20 ml of Omega-3/Omega-6 blended oil (1:3.5-5 ratio of A-3/n-6

fatty acids) to help maintain muscle membrane lipids – preferably with 100 IU vitamin E added to the diet daily as an muscle anti-oxidant.

3. A deficiency of calcium or a block of the release within muscle cells has been linked to cramping. A supplement of soluble calcium, such as 10g ( 2 teaspoonsful) of dicalcium phosphate (DCP) and 100-150IU of vitamin D3 daily will provide bio-available dietary calcium and phosphorus. It is suggested that a veterinarian can administer 10ml of 10% calcium borogluconate sterile solution slowly into the vein 2- 4 hours before a training sprint to provide higher blood and muscle levels of calcium ions, but be very careful, as excessively rapid injection can arrest the heart.
4. Administer a daily slow-release potassium tablet (600 mg potassium chloride) daily, increasing to 2 tablets over the tongue 4 hours prior to racing – especially for a nervy greyhound or ‘kennel barker’ and ensure adequate cool, clean water is available.
5. Often, the only therapy required to prevent sub-clinical cramping associated with dehydration is to supplement with slow release potassium, as well a 100 IU vitamin E, 0.03-0.05 (50 µg) of organic selenium and 250 mg vitamin C as calcium or sodium ascorbate. Boosting vitamin C to 1000 mg at 12 hours prior to racing may help some greyhounds to recover more rapidly after a race.
6. Injections of 5ml adenosine triphosphate (ATP) at twice weekly intervals for 2-3 weeks are also widely advocated as a prevention for cramping, but I have not seen any reduction in the incidence in most susceptible greyhounds.
7. Where a greyhound suffers fear and anxiety prior to racing, I have found that a course of Dilantin (Phenytoin sodium) tablets, given as a 200mg tablet divided between 2 feeds for 10-14 days, can help settle a nervous disposition and assist in reducing the risk of cramping. The drug must be withdrawn at least 72 hours prior to racing-check with local withdrawal rules.
8. Train to achieve and maintain an adequate level of fitness for the distance and speed of the race and try to give ‘crampers’ a brisk walk to warm-up and a light muscle massage before loading into the traps. In chronic ‘crampers’ – retire the animal and if it is a bitch – avoid breeding from her.

## **CYSTITIS – a brief**

Cystitis, or inflammation of the bladder wall, affects about 5% of racing bitches. It is most common in bitches fed on full dry food based diets or where urinary alkalinisers or muscle buffers are supplemented on a daily basis. Bitches with ‘urine burning’ of the vulva also lick themselves, introducing bacterial infection which proliferate in alkaline urine, into the urethra, which can ascend into the bladder. Severe chronic infection can result in ‘crystals’ of magnesium and phosphate mineral salts which settle out in alkaline urine. Cystitis is uncommon in dogs. Symptoms include squatting frequently to urinate, passing small volumes of concentrated urine and some bitches may start to wet in their kennel. In about 60% of bitches, cystitis can be cleared up when 600g of raw meat is added to the diet to help acidify the urine, or 1500 mg of dl-methionine, or 500mg of ammonium chloride, are given daily for 7-10 days. Urinary alkalinisers must be withdrawn during acidifying therapy and sparingly used after sprints or racing thereafter. Chronic infection is best controlled by antibiotics. Dampening dry foods and adding electrolytes helps increase water intake and provides a beneficial flushing effect.

## **DEHYDRATION**

Dehydration is the most common condition that affects the racing greyhound. In survey of 100 greyhounds examined pre-race at a racetrack, I found that 78% were mildly dehydrated as evidenced by a slow skin pinch test. It is caused by reduced fluid content in the blood, muscle and tissue cells. Underlying causes include metabolic influences such as chronic low grade cramping, physical stress and chronic muscle injuries or soreness, inadequate moisture in food and electrolyte imbalances or excessive loss in excitable greyhounds. It can also result from respiratory fluid loss due to barking, panting under hot conditions, gastro-intestinal loss as a result of diarrhoea or vomiting. In fact, because of the often multiple causes of dehydration in the one animal, it is now referred to as Dehydration Complex. It is classified as **mild** (2% fluid loss and slow skin pinch return of 1-1 ½ seconds, **moderate** (4% loss and dry skin and 2-2 ½ second skin pinch return) and **severe** (5-7% loss and dry skin and mouth membranes, sunken eyes, tucked up belly and skin pinch return of greater than 3 seconds).

### **Predisposing causes**

Greyhounds are characteristically poor drinkers and often drink insufficient water to replenish losses. A greyhound under a warm-hot environment will drink up to a litre of water per day, but under cool conditions, the water intake per day can be halved. When combined with the influences of physical stress imposed by racing with inadequate intake or replacement of electrolytes, particularly chronic potassium salt loss, greyhounds can become chronically dry in the coat and dehydrated. It is also associated with many other stress related conditions, such as Bald Thigh Syndrome, Cramping and Racing Thirst.

### **Typical symptoms**

The ‘parched’ look with a dry coat, tucked up belly and loss of elasticity in the coat (slow pinch test return) are well recognised by most trainers. Blood tests reveal an increased serum protein above 65g/L and a PCV above 65% in a resting greyhound.

## Management

Where dehydration results from excess fluid loss caused by acute diarrhoea or vomiting, or stress conditions such as Exertional Rhabdomyolysis or Racing Thirst, then intravenous fluid and electrolyte therapy should be given to restore blood fluid levels and metabolic function.

Simple ways to prevent dehydration include:

1. Soaking all dry food with water or meaty broth to a soft, mushy consistency.
2. Providing cool, clean, fresh water in bowls within easy reach.
3. Adding an electrolyte to supplement to the diet – preferably a low sodium (greyhounds do not sweat) with higher potassium formulated for greyhounds.
4. Supplementing with slow-release potassium tablets (600 mg potassium chloride) daily in excitable greyhounds, with 2 tablets given over the tongue 4 hours prior to racing – provide limited water to drink to avoid excessive pre-race weight gain.
5. Providing a cupful of a proprietary liquid rehydration drink after travelling prior to race day kenneling and during cool down after a race, or administering 10 ml over the tongue plus half a cupful of slightly warm water to drink pre-race.
6. In chronic cases, increasing the fat intake to 15% of the diet by adding 60-90g suet, lard or meat trimming fat to the main meal daily for 7-10 days will help provide ‘metabolic water’ during digestion ( provides 107ml water per 100g fat).

**Handy Hint** *During hot or cold weather, reverse cycle air conditioning can dry the air and dehydrate the respiratory tract, leading to coughing and increased risk of airway infection. Always place a bowl of warm water in the kennel area so it evaporates to help maintain normal air moisture levels.*

## EPILEPSY – a brief

Although a rare event in a racing greyhound, an epileptic fit in a young greyhound can cause concern for the owner/trainer. A single, mild seizure lasting a few seconds can occur during hot weather in an excited or overheated greyhound after a hard race. However, repeated seizures lasting more than 30 seconds up to 2 minutes often force retirement from racing. Causes include head injury from a fall or collision during a race, recovery from Distemper virus infection and lead poisoning from licking lead based paint off kennel walls. Brain tumours are a possible cause, but rare in greyhounds of racing age. Management is aimed at keeping the greyhound cool and quiet. Medication with anti-epileptic drugs, such as potassium bromide are useful, but cannot be used close to racing and seizures can occur once blood levels are eliminated.

**Handy Hint** *If a greyhound has an epileptic seizure with excessive eye and head movement, muscle stiffness and collapse, it may overheat quickly, especially if it is already hot after a trail or race. Prompt first aid to cool the body by tipping cool water over the animal and vigorously massaging the body to restore blood flow is essential to avoid hyperthermia and long term nerve and muscle damage.*

## GINGIVITIS – a brief

Inflammation of the tooth-gum margins (periodontal disease) is a very common problem in greyhounds fed on soft dry food and meat based diets. Bacteria colonise the plaque or ‘tartar’ on the teeth, causing bleeding of the gums and a foul breath from fermentation of trapped food residues between the teeth. The major secondary problem is chronic tonsillitis which can affect the appetite and airway function in severe cases. Management includes regular descaling to remove tartar around the canine and molar teeth, with antibiotic therapy to control persistent infection. Providing a 400g beef brisket bone once a week will help to clean away the tartar and maintain clean teeth. Some dry foods contain sodium hexametaphosphate that binds to the calcium of the teeth enamel and thus prevents tartar from precipitating and attaching to the teeth.

**Handy Hint** *Swabbing the tooth-gum margins with a mixture of one part 3% hydrogen peroxide in two parts of water, applied with a cotton bud daily for 5-7 days, will help oxygenate the inflamed areas and suppress anaerobic bacterial growth.*

## HYPOTHYROIDISM – a brief

Because greyhounds have a naturally lower level of circulating thyroxine (T4) thyroid hormone in their blood when in race training, veterinarians not familiar with greyhounds, may be concerned that a greyhound which apparently lacks form, could have a hypothyroid condition. Studies have failed to link low thyroid with poor performance in racing greyhounds, although a dull coat and scaly skin are signs of low thyroid function in other breeds of dog. Diets low in iodine can result in reduced thyroid activity, but this is not common in racing greyhounds. Bald Thigh Syndrome (BTS) is responsive in some greyhounds to thyroxine supplementation and greyhounds with a consistent loss of form in prolonged training, may also improve following a 3 week course of thyroxine therapy.

## LARYNGITIS – a brief

Laryngitis is often associated with Kennel Cough for 2-4 weeks after the initial infection. In my experience, greyhounds with severe gingivitis and chronic tonsillitis often develop a low grade laryngitis and tracheitis due to high oral levels of infection. Greyhounds which bark in the kennels or when traveling can develop a low-grade laryngitis and throat inflammation.

**Handy Hint** *A course of antibiotics is often helpful in clearing up local infection in the throat, but underlying causes such as gingivitis and tonsillitis must be resolved. A mixture of 10 ml glycerine and 0.2ml (3 drops) of 10% PVP iodine solution administered over the tongue daily for 7-10 days, followed by 10 ml plain glycerine given 5 minutes before walking or trialing, may help to provide antiseptic protection, soothe and lubricate the throat.*

## MILK ALLERGY – a brief

An allergy to cows' milk can result in skin allergies and a hive-type reaction along the neck, rib cage and between the hind limbs in young greyhounds, as well as diarrhoea in others. Milk is often given as a source of calcium and fluid, but a maximum of a cupful per day only provides 300 mg calcium of the 6g average daily need, or 5% of the total calcium need and insignificant levels of protein.

**Handy Hint** *Trainers often report that a greyhound has a 'biley' throat with excess mucus and phlegm, and in many cases, I find that these symptoms are secondary to feeding milk. Once milk is removed from the diet, excess mucus secretion often clears up within 4-7 days. Dampen dry food with water or meaty broth rather than milk – reserve the milk feed for newly weaned puppies until 6 months of age.*

## PANNUS – a brief

Pannus, or Superficial Stromal Keratitis (SSK) is an autoimmune type condition that develops on the cornea of one or both eyes and evidence suggests that it is inherited and triggered by exposure to ultra-violet light in greyhounds confined to outside yards, especially in young greyhounds. Although initially the condition has a similar appearance to a corneal ulcer, but over a 2-4 week period, a web-like cover of fine red blood vessels spreads across the cornea, with scarring and restricted vision. Prompt recognition and aggressive therapy with cortisone eye drops and confinement to a darkened kennel will suppress the immune reaction, combined with conjunctival long acting cortisone being used in retired greyhounds to suppress and maintain control of the condition.

## RACING THIRST OR 'WATER DIABETES' SYNDROME

The term 'racing thirst' is used to describe an excessive thirst for water that can develop within hours of a hard race, leading to the passing of large volumes of dilute urine and dehydration. In Australia, the condition is referred to as 'Water Diabetes' but is not related to the diabetic condition.

### Predisposing causes

The normal action of the anti-diuretic hormone (ADH) which acts to limit urine output, is reduced or overridden by physical stress and cortisone hormone released from the adrenal glands following of extreme or strenuous exercise. There are many 'stressor' factors that can result in 'Racing Thirst', including chronic pain from muscle injuries, a nervous temperament, low protein diets, frequent racing, long distance travel, sudden weather changes, chronic dehydration, and electrolyte imbalances. Therapy with cortisone drugs to reduce inflammation can result in RT. Even a noisy kennel environment can trigger a chronic form in some greyhounds.

It is classified as **hyper-acute**, evidenced within 5 minutes of a strenuous race and water intake (if provided) of between 5-15 litres per hour with a urine SG of below 1.005; an **acute** form within 10 minutes to 24 hours of a race and water intake of 2-10 litres in 24 hours and a urine SG range of 1.005 to 1.010; and **chronic** condition not related to extreme physical stress in many cases that develops in training with a water intake of 1-2 litres per day and urine SG of between 1.010 to 1.025. These degrees of RT are relative to the speed of onset and the clinical signs associated with the stress related condition.

### Classical signs

In the acute condition, a greyhound can develop an excessive thirst within a few minutes after a stressful race, losing 5-10% of its bodyweight in 4-6 hours with associated dehydration, even when water is available. Often affected greyhounds will empty the water bowl and even drink their own dilute urine which is excreted in large volumes. The less acute condition may persist from 7-10 days after a hard race and a chronic form may develop after repeated episodes, as outlined above.

### Management

A simple test to confirm a lower than normal specific gravity of the urine will help diagnose the relative degree of RT and the signs of excessive drinking, urination and developing dehydration will help determine the type of management. Acute cases may need emergency fluids and electrolyte solution into the vein to prevent severe, devalitising dehydration and even onset of Exertional Rhabdomyolysis. Preparations are available to replace or mimic ADH hormone (Minirin liquid (3 drops) or Vasopressin nasal spray (4 drops), both dosed 4 times per day into the side of the mouth to ensure absorption, for 24-36 hours) will help restore ADH control, but the response must be monitored under veterinary

supervision. I also recommend combined therapy with oral electrolytes, 250-500 mg vitamin C daily and in chronic cases, thyroxine hormone tablets and a course of antibiotics for 5-7 days, as it helps the animal to cope and regain its vitality.

**Handy Hint** *In my experience, recognising the acute form of the condition within a couple of hours after of race (water bowl and kennel flooded with urine) and limiting water to 500 ml (2 cupsful) every 8-12 hours without causing dehydration, can restore and readjust ADH control within 24 hours in 50% of greyhounds. I normally recommend that the greyhound be confined to a quiet, darkened, warm kennel to rest during this time as this can help reverse the problem. I also recommend electrolytes with a 600mg of slow release potassium tablet for 7-10 days and a supplement of iron and vitamins daily for 3-4 weeks, because many chronically affected greyhounds become anaemic.*

## **RIGHT MEDIAL RADIUS STRESS MICRO-FRACTURE – a brief**

About 20 years ago, Dr. Phil Davis, a pioneering veterinarian in greyhound injuries and medicine at Sydney University, reported an obscure lameness condition that developed in the right forelimb of heavy, male greyhounds (above 33 kg/70 lbs) over 2 ½ years of age, running on a small end circle racetrack. He called it Right Medial Radius Stress Micro-Fracture, or RMRSF.

RMRSF causes lameness and loss of cornering speed due to hairline stress-like cortical bone fracture that appears to develop on the inside of the right forelimb about 60 mm below the elbow. Affected greyhounds also fail to chase but do not show signs of lameness or shortened stride at the walk, although they exhibit discomfort and withdraw the limb when heavy thumb pressure is applied to the target area.

Diagnosis is often difficult to confirm, as the fatigue micro-fractures are only seen on high resolution digital radiographs. The condition will resolve if the greyhound is rested for 3-4 weeks and then run on a straight track for a further 3-4 weeks. Magnetic field therapy applied to the limb over the fracture site and daily supplements of calcium and vitamin D will assist repair.

## **WEBBING WARTS – a brief**

I have included my experiences with webbing warts as I have seen an outbreak in a group of greyhounds traced back to their visiting a trial track 6 weeks prior to the warts appearing on the webbing, toes and lower limbs. The ‘warts’ are thought to be caused by the papilloma virus, and some greyhounds developed up to 10 warts on the webbing and toes within 7-10 days or 7-8 weeks after the possible initial contact and infection.

Often clusters of the warts grew rapidly on one or more feet and became abraded as the greyhound was exercised or galloped. The wart virus was thought to be introduced through abrasions, sand burns and cuts in the webbing. In the outbreak detailed above, the probable source was traced back to the wash bay where the virus had presumably contaminated the surrounding damp sandy and grassy area, but it was not proven by transmission trials as most trainers did not want their dogs laid up with warts on their feet!

Warts are usually removed by swabbing with antiseptic, squeezing out the internal core and applying a 10% iodine swab and bandaging the foot for 24 hours, then daily application of iodine for 7-10 days until the wart area dries up and heals. Warts on the edges of the pad or nail cuticles may have to be removed under local anaesthetic and electro-cautery.

Prevention involves maintaining strict hygiene in kennels and wash areas – some trainers dip each greyhound’s feet in 10% PVP iodine solution, or a mixture of 1 to 5 hypochlorite bleach with water, after washing them at trial tracks as a precaution against infection.

### Notes