

THUMPS IN WESTERN AUSTRALIAN GREYHOUNDS

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There are 6 greyhound race meetings a week in WA consisting of approximately 84 races and 6 - 10 qualifying trials with about 600 greyhounds engaged.

Meetings are held at Cannington, Mandurah and Northam over distances ranging from 297m to 715m.

There are three experienced greyhound Veterinarians registered as Official Track Veterinarians in WA. I currently officiate at 5 of the 6 race meetings each week.

Veterinarians make an effort to be in the region of the catching pen for most races so as to observe the greyhounds during the race and immediately post race.

Consequently we see all the greyhounds that race in WA and are aware of a syndrome that appears to be affecting the performance of some of these greyhounds.

HISTORY

In April 2008 with the onset of colder weather I began to see greyhounds that were leading races and then fading badly in the latter stages of the race (and out of character for that particular greyhound) resulting in the greyhound being vetted for poor performance. These greyhounds did not exhibit injuries to explain the poor performance. It was at this time that I began to see cases of greyhound thumps.

Over the next few months I began to see more and more greyhounds exhibiting thumps with many these greyhounds not performing to expectation.

I have been officiating full time at WA greyhound tracks for the past 12 years and had not observed a single case of thumps in a racing greyhound prior to April 2008.

There have not been any changes in the greyhound population or industry that can explain the emergence or the high incidence of thumps in WA.

I know that I have not previously missed detecting thumps due to my method of examining greyhounds (standing over the greyhound) and that I used to examine more than double the greyhounds (late 1990's to mid 2006) than I do now.

SIGNS

Pre race there is no visible indication that a greyhound is going to develop thumps post-race.

Most of the greyhounds that develop thumps start thumping 5 – 10 minutes post race with the thumps lasting for 10 – 15 minutes.

More severe cases tend to start thumping immediately post race and the thumps last for a longer period (in excess of 20 minutes) with the magnitude of the thumps greater and the frequency of thumping more rapid than the “standard thumps”.

Some greyhounds have exhibited signs of thumps immediately post race but had ceased to thump when examined at 10 minutes post race.

General signs seen post race are:

Low grade thumps:

- **develop 5 – 10 minutes post race**
- **thump rate** is slower or synchronous with the heart rate
- **left side** - the thumping is exclusively left sided at the level of the last 3 ribs
- **cyanosis** tongue and mucous membranes
- **poor capillary refill** of oral mucous membranes
- **femoral arterial pulse** is weaker than normal and the volume of the artery feels less
- **rhabdomyositis** mostly involving the muscles of the mid-back
- **tend to resolve quicker**
- variable effects on performance

More severe thumps:

- **develop immediately post race** in most cases
- **respiratory distress** with the greyhound appearing to have overexerted but generally has run a slower time than normal
- **longer recovery time** this is quite evident when examining the greyhounds post race
- **thump rate** - the amplitude of the thump is magnified
 - many greyhounds exhibit extremely rapid thumping (fibrillatory) far in excess of the heart rate
- **rhabdomyositis** - commonly develop rhabdomyositis of the muscles of the mid-back and/or the saddle region (usually bilaterally). The most severe cases may include rhabdomyositis of the quadriceps/gluteals and/or gracillus
- **cramp** – may or may not occur but the increased incidence of post race cramp appears to be related to the increased number of greyhounds with thumps. Cramp is more likely to be bilateral but can be unilateral. The saddle and/or lumbar muscles are commonly involved.

There has been an increase in the number of greyhounds suffering cramp of the gracillus muscles only.

More severe cases have the whole saddle and/or lumbar region in cramp and may also include the shoulders, gluteals and quadriceps.

The most severe forms of cramp have the shoulders, the whole back and hind quarters in cramp. These greyhounds generally collapse during the later stages of the race or in the catching pen.

- **hypoxia** - some exhibit hypoxia and staggering (these are not the serial hypoxic greyhounds)

These greyhounds have cyanosis, pupillary dilatation, a high stepping stilted gate in the forequarters and sometimes signs of cramp. In severe cases the greyhound will collapse in the catching pen and may appear comatosed

- **hypovolaemic shock** - several greyhounds have died immediately post race in the catching pen.

Gross post mortems showed signs of hypovolaemic shock.

NOTE: not all cases of cramp or hypoxia are linked to having thumps.

right side thumps - I have seen 5 - 6 greyhounds that thump on both sides (but more strongly on the left side). These greyhounds consistently thump on both sides

Greyhounds that suffer severe interference or fall during the race tend to develop thumps.

Greyhounds that stress in the kennels are also more likely to develop thumps.

“Non chasers” are less likely to develop thumps.

Kennels that have concurrent outbreaks of illness (eg gastroenteritis, cough etc) will show increased incidence of thumps (with reduced performance) in apparently healthy kennel mates (obviously suffering sub-clinical illness).

PERFORMANCE

For several months from April 2008 there was a noticeable increase in the number of greyhounds fading in the last 1/4 - 1/3 of their race, losing on average 5 – 8 lengths and up to 16 lengths (0.3 -0.5 to 1.0 seconds) on their normal performance. The sectional times for first 2/3 – 3/4 of the race were generally consistent with the greyhound’s previous performances.

These greyhounds that faded or performed poorly during a race were ordered to undergo a post race veterinary examination by the Stewards.

Examination of these greyhounds revealed some having a visible and sometimes audible pulsation (thumps) on the left side.

Lately the effects on performance are variable.

- Some greyhounds will perform to their best levels and exhibit thumps
- Others perform below their best and exhibit thumps
- I have seen cases where greyhounds that have performed badly and develop severe thumps and then raced 4 days later winning and running close to their best time.
- There are ample cases of greyhounds performing as expected and not having thumps then at their next start running below expectation and exhibiting thumps.

The number of greyhounds fading badly appears to have reduced since April 2008 but trainers still consider that many of their greyhounds showing signs of thumps are racing below their expectations.

They are continually telling me that something is affecting their greyhounds and their performance.

Since the start of thumps in April 2008 the number of greyhounds that have had cramp and/or hypoxia post race has increased dramatically.

Similarly the number of greyhounds developing acidosis has increased over previous years. I am aware of one longstanding trainer that has had his only cases (3) occur in the past 2 months

It is difficult to document the full extent of the effects of thumps on performance because 40% of all starters in WA (50% at Cannington) have had thumps post race on the days that all starters have been examined and I cannot be certain of the greyhound's thumps status at other starts prior to or after the survey.

However the percentage of greyhounds having thumps at any given race meeting is expected to be similar when taking comments from trainers into account.

One has to rely on feedback from trainers who actively examine their greyhounds post race and then pass on this information.

The period that individual greyhounds have thumps is also variable.

- Some trainers have said they have greyhounds that have thumps at every start for up to 12 weeks.
- Other trainers state that it is common for a greyhound to recover from thumps only to develop them again at a later time. This is verified in my studies.
- One trainer has a greyhound that has had thumps at every start for the past year.

It is the performance of Congratulations at Cannington (13 June 2009) that exposes the severest of cases of the effects of the thumps complex to the viewing public.

This greyhound was \$1.65 favourite, having won his last start over 530m and now having his first start over 642m. Approximately 380m into the race he was not performing well and began to show signs of cramp. The greyhound finished 43.25L last then collapsed to the ground just after the finish line.

This was all visible on Sky Racing and over the internet on the Greyhounds WA website. The greyhound was vetted and found to have hypoxia, cramp of the shoulders and severe thumps (again this information is available on line).

A comment from a leading trainer with 30 year experience in WA greyhound racing typifies what trainers think about thumps and performance.

He states "regarding the thumps – haven't had many with it but the ones I have, some have performed normal but most don't perform to their best level – anything up to 10 lengths slower".

It is interesting that before he had a greyhound vetted at the track that exhibited thumps he was of the opinion "that thumps was a load of crap".

Of the 39 greyhounds he started during the survey 14 (36%) had thumps.

He has also said he has had 2 pups develop thumps after running 300m up his straight track.

A leading Victorian trainer recently said to me "no one can tell me what causes thumps, no one can tell me how to treat thumps, so I don't worry about it". His greyhound was run down in the home straight in the National final and exhibited severe thumps post race – coincidence?

FACTORS CONSIDERED

When trying to find the reason for the emergence (or increased incidence) of thumps the following factors have been considered.

Environmental conditions

The time of year does influence the incidence of thumps.

At any race meeting there are approximately 70% of greyhounds exhibiting mild dehydration (lumbar skin test).

It appears that sudden and marked changes in weather conditions (mostly autumn and spring) contribute to an increase in the degree of dehydration resulting in greater numbers and an increase in the severity of rhabdomyositis/cramp and/or thumps. This is seen several days after the passage of a cold front or after 3-4 days of high temperatures in summer.

Constant weather conditions whether hot or cold tend to decrease the number and severity of signs.

The 3 studies examining for the presence of thumps in every greyhound that raced at 10 race meetings deliberately targeted milder weather conditions where the temperature was between 16 and 22 degrees C.

Greyhound Health

Around July 2007 I started to see changes in greyhound blood profiles presented to me.

These changes were similar to those that I had seen in 2000 – 2002 when there was a long period of intermittent gastro-intestinal disease affecting the local greyhound population.

During this period I saw:

- many greyhounds with gastro-enteritis
- adult greyhounds developing haemorrhagic gastro-enteritis the day after racing with some deaths.
- many pups that had developed bone deformities (Osteomalacia Hypertrophic, Osteodystrophy)
- young greyhounds with enlargement of the distal radial and ulna epiphyseal plates that could not gallop properly indicating widespread bone problems.

The widespread use of Protech C2I vaccination (Corona/Leptospirosis) in WA greyhounds may have resulted in the disappearance the gastro-intestinal disease, the development of bone deformities in new pups and the return to normal blood profiles.

In November 2007 I contacted Forte Dodge and discussed the emergence of similar blood profiles to 2002 but they showed disinterest.

Blood Tests since July 2007

These are standard greyhound profiles taken 3 – 4 days post race to determine haematological, biochemical and electrolyte parameters.

The changes to blood profiles presented to me by trainers are:

Haematology

Blood tests revealed some mild changes that may not manifest clinical signs but do affect performance.

RBC's

There may be a decrease in Hb PCV and RCC. This will be more apparent if the syndrome continues for a period of time.

Decreases in these values will lead to a prolonged drop in performance.

WBC's

There is generally a mild leucocytosis due to lymphocytosis. (the % of lymphocytes mostly increase from around 21% to 27% but can rise higher) Occasional reactive lymphocytes have been noted.

Many of the greyhounds have a neutrophilia (increasing from 73% to 85 -90%) and associated lymphopenia. I consider this neutrophilia to be secondary to an underlying lymphocytosis (which is seen after the greyhound has been treated with antibiotics)

These greyhounds also exhibit a monocytosis (increasing from 3-4 to 6-8%)

Eosinophilia occurs only when there is mucous and/or blood in the faeces.

Na/K Ratio

Even though the levels of Sodium and Potassium are within accepted ranges there are significant changes in the Na/K ratio.

For optimum performance the ratio is between 27 and 28 (30 years of experience in WA) and bearing in mind that potassium is mostly an intracellular electrolyte changes in the blood indicate major changes within the cell.

Affected greyhounds have ratios of between 30 and 35 (highest to date is 39.4)

Administration of potassium supplements has failed to alter the Na/K ratio.

A/G Ratio

Most racing greyhounds have a normal A/G ratio of 1.33 which is quite consistent.

Greyhounds exhibiting poor performance have lower levels, ranging from 0.60 in severe cases to 1.2 in mild cases.

Readings of 1.4 to 1.8 are generally associated with higher neutrophil levels and reduces to below 1.3 when treated with antibiotics.

The albumin and globulin levels can be in the "normal" range but the ratio is more indicative when considering performance.

CK and Creatinine

Obviously these are elevated post race, especially if cramp and hypoxia are involved.

Calcium

These levels are occasionally low but generally are within the "normal" range. Further work is necessary to detect changes in ionized calcium levels before and after racing to determine whether calcium is a major factor during this syndrome.

Murdoch University Study

Following submissions to the Greyhounds WA board Murdoch Veterinary School was approached in May 2008 to investigate the outbreak of thumps and its effect on performance.

There was difficulty in attracting interest from post graduate student to take on the study.

Eventually a team of Murdoch University veterinarians attended Cannington on 13 and 27 August 2008 to observe greyhounds affected by thumps.

Nine greyhounds were examined and assessed.

Assessments included: electrocardiography
 blood Pressure
 haematology
 biochemistry
 blood gases and electrolytes
 urinalysis
 faecal analysis

The main findings were that the thumps was Synchronous Diaphragmatic Flutter caused by hypocalcaemia (low ionized blood calcium) that was induced or exacerbated by metabolic alkalosis.

Further investigation of greyhound diets was recommended.

Race Distance

From the following table it is evident that the incidence of thumps increases as the further the distance raced increases.

DISTANCE	STARTERS	THUMPS	% THUMPS
MDH			
302m	84	27	32.1
405m	342	113	33
492m	168	61	36.3
647m	16	6	37.5
CTN			
530m	367	171	46.6
642m	16	6	46.7
715m	12	10	83.3

Factors that I have rejected

I have rejected the following factors as having a major influence on the emergence of thumps in April 2008 as there were no significant changes in these factors within the WA greyhound population in the 12 months prior to or the 17 months after the thumps outbreak.

Track conditions

There have not been any changes to the three tracks prior to or since April 2008 that could be considered to cause the emergence of thumps.

However heavy track conditions could cause more greyhounds to develop thumps or to cause more severe cases.

Track kennel conditions

All tracks have refrigerated cooling systems that maintain the kennel temperature at approximately 18 degrees C. This temperature is checked and recorded during each race meeting. No kennel parameters changed prior to the onset of thumps.

Racing schedule

Due to the grading conditions in WA most greyhounds race no more than once per week. There are the occasional times when a greyhound do race more than once in a week.

Weight variation

Studies of weight variation from the previous start have not shown any significance in the percent of greyhounds with or without thumps.

Training

Training methods did not dramatically change prior to or after April 2008 to create thumps. However training methods do have a bearing on the levels of stress placed upon the greyhound and do have a significant impact on the severity of thumps. For example when increasing the distance raced.

It must be noted that every trainer in WA has had at least one greyhound with thumps.

Fitness and Injury

Fitness levels and the injury status of greyhounds presented for racing are variable between trainers and within a training establishment but that has always been the case since I have been involved in the greyhound industry.

Obviously these parameters have a bearing on performance and the development of thumps.

Diet

Again diets did not change before or after April 2008.

The diets fed within the greyhound industry are quite variable and consist of a range of meats (chicken, kangaroo, beef, horse, mutton, donkey, camel) and kibble (many brands)/breads, sometimes vegetables, mineral and vitamin additives (greyhound, horse, human) and different polyunsaturated oils.

Increasing calcium and/or potassium supplements has not reduced the incidence of thumps.

Kennel conditions

Not all trainers have ideal kennels and I feel that this contributes to an increase in the incidence and severity of the thumps. One of these poor quality type kennels has over 70% of their starters exhibiting thumps post race however another kennel of good quality also has a thumps rate of 70%.

Cold draughty conditions appear to increase the incidence and longevity of the thumps.

Stress

Any factors that increase the stress placed upon an individual greyhound appear to increase the incidence of thumps.

This includes the nervous or timid greyhound and especially the greyhounds that “play up” in the race kennels.

Breeding

I do not think that the breeding has had a bearing on the incidence of thumps as the WA greyhound population did not change significantly prior or post thumps outbreak.

When considering the following statistics it must be pointed out that the sample size is small so that the results may be misleading.

The 1004 starters examined consisted of

731 individual greyhounds by 107 individual sires
out of 484 individual brood bitches

30 sires had 10 or more starters 10 to 72 starters
792 starters in total = 78.9% of 1004
313 had thumps = 39.5% of 792

The percentage of thumps for starters from these sires ranged from 3% for Where's Pedro (1 of 31) to 70% for Regal Bart (7 of 10).

15 sires had above the 39.4% average for the 1004 examined.

7 brood bitches had 10 or more starters 10 to 15 starters
79 starters in total = 7.9% of 1004
33 had thumps = 41.7% of 74
43 individuals (22 had thumps, 21 did not)

The percentage of thumps for starters from these brood bitches ranged from 17.6% for Dionysus to 92.8% for Sandeez Brandee.

State of origin of greyhound

WA has always had large numbers of interstate greyhounds purchased for racing.

There does not appear to be any relationship between the origin of the greyhound and the incidence of thumps.

I have seen many greyhounds that have recently arrived in WA and raced within a day or two and exhibit thumps post race. This is commonly seen during major cup races and at the recent Nationals.

THEORY

I consider that Thumps may be the result of an infective agent that causes mineral and electrolyte changes and a subsequent hypovolaemic condition in racing greyhounds.

I am basing this theory on research conducted during the past 17 months where I have:

- not seen any other reason for the emergence of thumps
- not seen any major changes in race facilities, climatic conditions, training methods, diets, etc to explain the widespread occurrence throughout WA and possibly the other states.
- examined hundreds of greyhounds with thumps
- discussed the condition with most of the trainers of these greyhounds

- looked at blood tests from many of these greyhounds
- euthanased (due to severe injury) and then autopsied 6 greyhounds that had thumps
- performed on autopsy on a euthanased greyhound that was still thumping.

Infective aetiology?

Prior to April 2008 I had not seen a case of post race thumps in a greyhound at a WA race meeting. Due to the way that I examine greyhounds (stand over the greyhound) it is impossible to miss the thumps.

Thumps exploded onto the racing scene with up to 10 cases seen per race meeting. It wasn't until 22 and 23 October 2008 when I decide to examine every greyhound at the race meetings that the true numbers become apparent.

Initially thumps appeared to develop within a kennel and then spread through the kennel area. Blood tests from July 2007 indicated that there was a change occurring in the WA greyhound population.

Hypovolaemia

Some of the signs seen in greyhounds with thumps ie.

- cyanosis
- poor capillary refill
- feeble femoral pulse
- fatigue/fading
- respiratory distress
- cramp
- hypoxia

may all be attributed to hypovolaemia.

Autopsies on the greyhounds that had thumps prior to euthanasia showed

- engorgement of the liver, spleen and kidneys (even when the use of Lethobarb has been taken into consideration)
- hyperaemia of the intestines
- engorgement of the mesenteric blood vessels and posterior vena cava
- very little blood within the muscles. This was quite evident when autopsying the greyhound that was still thumping even though respiration had ceased for several minutes.

COMMENTS

I am concerned that the premier race meeting in WA (Cannington Saturday night 4 July 2009) has revealed a 55% incidence of Thumps in participating greyhounds. Thumps is not a normal consequence of racing and to have 55% of starters at a venue have thumps is very abnormal.

Do we now regard this as a normal feature of greyhound racing?

I am sure that if there was a similar incidence of Thumps at the premier Thoroughbred meeting in WA (or other state) there would have been significant interest and research undertaken.

If members of the public or members of various welfare lobbies saw these greyhounds thumping post race, some staggering around often unable to stand because of concurrent hypoxia and or cramp and others collapsing to the ground, I think there would be an uproar that would have major ramifications for greyhound racing in this state.

Obviously the knowledge of greyhounds not performing to expectation must have some effect on betting turnover.

I CAN NOT THINK OF A GREYHOUND TRAINER IN WA THAT HAS NOT HAD AT LEAST ONE GREYHOUND DEVELOP THUMPS POST-RACE.

Thumps are not only confined to WA.

I have seen numerous visiting greyhounds from another state exhibit thumps post race and often they have only been here for a day or two.

Dr Brain Vale saw 7-8 greyhounds in the wash down bay at Sandown during a visit in October 2008.

Final year Murdoch veterinary student Sara Gradwell after watching only 2 races at Palmerston North, NZ in June 2009 saw 4 greyhounds with thumps immediately post race.

WA trainers have told me that they have had discussions with their eastern state counterparts who have reported having greyhounds with thumps.

I have also been told about a blue Heeler developing thumps after competing in an obstacle course in Perth.

POST RACE THUMPS EXAMINATION IN WA

In an effort to determine the extent of thumps in Western Australian racing greyhounds I decided to examine every greyhound that raced at Cannington (22 October 2008) and Mandurah (23 October 2008).

As the incidence of thumps had not abated 12 months after the initial surge of April 2008 I then examined every greyhound that raced in WA for the entire week 13 – 18 April 2009.

Following my report (Thumps in Western Australian Greyhounds) provided to Racing and Wagering WA and to Greyhounds Australasia, the President of the Australian Greyhound Veterinary Association, Dr Chris Doyle visited WA and together we examined every greyhound that raced at Mandurah (3 July 2009) and Cannington (4 July 2009).

The timing of the surveys was deliberately selected to remove hot weather from the equation.

1004 starters (731 greyhounds) have now been examined at 10 WA race meetings for the presence of thumps post race.

122 Trainers presented 1004 greyhounds

90 Trainers presented a total of 937 greyhounds with at least one exhibiting thumps

32 Trainers presented a total of 67 greyhounds with none showing signs of thumps (Note: ALL of these trainers have presented a greyhound at other times that have had thumps).

These results are the absolute minimum numbers of greyhounds exhibiting thumps post race as some may have ceased thumps prior to examination and others may not have commenced thumps at the time of examination.

OVERALL RESULTS WA – 2008/9

DATE	TRACK	STARTERS	THUMPS	% THUMPS	DOG	THUMPS	% THUMPS	BITCH	THUMPS	% THUMPS
22.10.08	CTN	98	46	47	54	24	44	44	22	50
23.10.08	MDH	105	45	42	59	30	51	46	15	32
13.04.09	MDH	102	27	27	62	17	27	40	10	25
14.04.09	MDH	109	36	33	59	24	41	50	12	24
15.04.09	CTN	109	43	39	63	24	38	46	19	41
16.04.09	MDH	91	20	21	44	7	16	47	13	28
17.04.09	MDH	100	34	34	65	28	43	35	6	17
18.04.09	CTN	95	49	52	47	25	53	48	24	50
3.07.09	MDH	103	45	44	59	26	44	44	19	43
4.04.09	CTN	92	50	54	56	30	54	36	20	56
		1004	395	39.3	568	235	41.4	436	160	39.6