

Greyhound Injuries

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This article is based on a lecture given at the 1990 BMAS Autumn Scientific Meeting held at the Royal Society of Medicine.



"Kings Hill"

(Photo - Stephen Nash)

Key words

Laser acupuncture, muscle injuries, physiotherapy, veterinary medicine.

Introduction

The greyhound is known to be one of the most ancient breeds of dog, represented in the sculptures of Egypt, Greece and Rome, revered as the companion of Kings in mediaeval times, and acknowledged in paintings by artists as diverse as Poussin, Mary Browning and Giles, and in the theatre - where, for example, Sir John Falstaff refers to a person as "gentle as a puppy greyhound". Also, who can forget the excellent television performance by a greyhound in an episode in the lives of Steptoe & Son?

Skilled in the chase, gentle in attitude, trusting in nature, only rarely mercurial in disposition, and remarkably free from the inherited and acquired defects which Man has bestowed on so many breeds, the greyhound presents itself as an agreeable and trusting patient for the veterinary surgeon, usually - but not always - suffering from the effects of Man's exploitation.

History

The greyhound's instinct to chase a moving quarry was utilised for sporting purposes from ancient days - the coursing of a hare by two greyhounds in competition, for points awarded for speed and ability to "turn" the hare, becoming a well recognised sport with its own rules and a governing

body - the National Coursing Club - formed in 1858. In 1882, the National Coursing Club formed a Stud Book, now known as the Greyhound Stud Book, in which breed records are meticulously maintained, and that organisation today, despite some criticism, is generally satisfactory in terms of speed of registration, economy and integrity. A similar system of Stud Book registration is in operation in Ireland, Australia and America.

Just over 60 years ago the first experiments in training greyhounds to chase an artificial hare developed into the spectator sport of greyhound racing, with five or six greyhounds pursuing a mechanically driven hare anti-clockwise around a track in front of a crowd of spectators. Purpose built stadia, with facilities for refreshments, meals and betting with both bookmakers and the stadium-owned totalisator mushroomed throughout the country and greyhound racing became Britain's second largest spectator sport. The larger promoting companies developed kennel complexes where several hundred greyhounds could be accommodated to provide a racing strength, the largest of these employing full time veterinary surgeons who became expert in the management of the "new" injury problems they were called upon to diagnose. Such men as J K Bateman (the first veterinary surgeon to replace a fractured bone with an artificial prosthesis), Alfred Sams and Lewis Gabriel developed effective surgical techniques for the repair of these problems. These veterinary surgeons had other problems - the detection of doping and

the prevention of disease in large canine populations being only two.

The development of rules of racing by an independent body of stewards, the National Greyhound Racing Club (NGRC), financed by registration fees from owners, trainers and promotional companies, with strict penalties for infringements, led to a division between those tracks willing to operate under these rules and an equivalent number of tracks running under their own individual systems. This division has been maintained by the NGRC Rule 174(i), which specifically prohibits greyhounds and owners registered with the NGRC from running at the non-NGRC tracks, with the result that many owners run their dogs at such tracks under fictitious names!

The injuries and problems are the same under both codes of racing.

The greyhound commences his or her career at 15 months and after running introductory trials around a track will commence regular racing, races being so arranged that in theory all the greyhounds have an equal chance of winning, to attract the betting public. It is important to realise that for, say, the 490 metre circuit at Wembley, only 1.5 seconds separates the potential Derby winner going round in 29.00 seconds or less from the bottom grader doing 30.50 seconds. Therefore soundness, or lack of it, is constantly in the minds of the owner, trainer and veterinary surgeon.

Weights vary from 22.0Kg to 36.0Kg and individual dogs are not allowed to vary more than 1Kg from race to race. The speed achieved is between 35-38mph, and races are run over all distances from 200 to over 1000 metres, with there being a similar variation in ability to sprint or stay long distances as in human or equine athletes.

There is a similarity to ballet dancers in that both dancers and greyhounds are doing a job for which they were not originally designed, and I am always aware of this compared to the concept of some veterinary surgeons that the greyhound is a small racehorse.

There are some anatomical and physiological points to consider:

1. Two thirds of the body is carried on the front limbs, one third on the hind limbs.
2. This forward gravity effect aids acceleration.
3. Muscles of the hind limb are larger and thus produce more power and strength.
4. The main bulk of muscles are on the outside of the body, for aerodynamic reasons.
5. The forelimbs have 80% steering function, 20% speed, with an important weight bearing and shock absorbing function.
6. Most limb extension is immediately prior to weight bearing, most flexion when the limb is in the air. Therefore extensor muscles are stronger than flexor.
7. In addition to flexors and extensors, abductor

and adductors contribute to limb movement, a complex interaction of a number of different muscles.

Factors influencing injury:

1. Speed into the bend. Some, especially young greyhounds, are so fast during the 80-100 metre race to the first bend that they fail to negotiate the bend and are either forced to check or collide with other greyhounds.
2. Structure of the track. The average track has two long straights of 80-100 metres and two bends, making a total circuit of 380-500 metres. At some tracks the bends are dangerously sharp.
3. The track surface. Tracks were originally turf, but in most cases the traditional turf track has been replaced by either an all-sand surface, or one in which the turf straights alter to a sand surface at the bends.

The first two tracks to change to sand - both, incidentally, non-NGRC tracks at the time - used a fine silica sand which was rolled several times during the course of a meeting. This surface produced a dramatic reduction in the number of injuries, especially toe injuries, and during the next few years stadia changed to partial or complete sand surface.

Unfortunately, not all the managements displayed the same degree of thought. At a number of courses builders' sand was laid, with pebbles and other foreign bodies a not infrequent extra hazard. Well-treated silica sand is a magnificent racing surface requiring relatively little maintenance. Anything else produces a crumbling surface when dry, and a claylike consistency which saps the dog's energy when wet, and under both circumstances presents the punter with a near impossible task in assessing the potential performance of the dogs. Sand is a lethal surface under frosty conditions unless the track is well salted.

An additional hazard is where the two surfaces, grass straights and sanded bends, are present at the same circuit, with a small but significant step up or down from one surface to the other.

Health

Injuries associated with racing before the skeleton is completely mature are common, usually associated with incomplete fusion of growth plates. Therefore a diet high in calcium and not excessive in protein and vitamins can be very important.

Bitches can be affected by hormonal factors. During the 11 weeks after a bitch has been in season, progesterone and prolactin rise in the blood stream even if no mating has occurred. This can effect collagen in tendons and ligaments. There is therefore a marked incidence of lameness in bitches returning after their traditional 11 weeks post-seasonal rest during which they do not race.

Training

As with all other athletes, the maintenance of "form" is associated with knowledge of the individual's dietary requirements and need for exercise. The trainer who allows his charges free access to the gallop always seems to have a lower incidence of lameness, and certainly the puppy who has been allowed free exercise during the growing period is a tougher customer than one who has been overprotected from the risk of hurting himself in the field.

Diagnosis of injury

1. History - The animal may be presented with a history of lameness during or after a race, or of having fallen or been knocked over. Loss of performance is a very common reason for the consultation.

2. Action when trotted - Acute lameness is of course obvious, less so is the slight "lifting off" when the dog comes to rest. Some injuries, particularly to the hock (ankle), Achilles tendon, and gastrocnemius are more obvious when viewed from the side.

3. A careful systematic examination, palpation and manipulation of all the muscles and limbs of the patient should be performed, being especially careful to compare left with right. Assessment of lameness depends somewhat on the patient's nature - ie. a very tense dog may squeak wherever touched, a "stoic" may give no sign at all. I find it helpful to watch the dog's face!

4. Radiography - This is a vitally important part of my work. The greyhound almost invariably, even when badly hurt, will lie still for X-Rays - we use non-screen film to obtain the best possible view of joint surfaces.

Injuries

1. Toes and Feet

Injuries and cuts to nails, quickes and pads all occur, and are dealt with by judicious use of clippers and various topical preparations.

The toes consist of three bones each, and during each contact with the ground the terminal part may turn over 180°.

Torn collateral ligaments are dealt with by nail amputation and rest.

Sub luxations are reduced and strapped, and the nail amputated.

Ruptured joints and severely distorted toes are sutured with various materials.

Metacarpal fractures are more common in the poorly calcified immature skeleton and usually heal well with conservative treatment.

Injured superficial digital flexor tendons are usually resected with successful results, while the flexor carpi ulnaris tendon, inserting into the accessory carpal bone, when damaged requires three months rest following initial injection with a sclerosing agent, and then direct application of a

950 nm. laser probe on 3 or 4 occasions.

2. The Carpal (wrist) Joint

The wrist is a complex of many joints, with an important weight bearing function.

Injury to the wrist is the most common cause of early retirement.

All wrist injuries are X-Rayed in my practice using lateral extended, lateral flexed, and antero-posterior views on non-screen film.

The most common fracture is that of the right accessory carpal bone, other carpal fractures being rare.

To underline some factors again, the main factors involved in wrist injuries are:

1. Sheer pace to the bend
2. Collisions causing an alteration in stride
3. Nutritional status
4. Genetics (many very fast young dogs with broken wrists are used for breeding)
5. Sharp bends
6. Ill kept track surfaces

Arthritis is a common sequel to wrist injuries.

Although infectious arthritis, polyarthritis and non-infectious (autoimmune) arthritis occur in greyhounds, by far the most common is osteoarthritis or degenerative joint disease.

Almost all greyhounds show radiological changes of carpal "wear and tear" at the end of their careers and very often long before.

Greyhounds run repeatedly on surfaces of variable consistency at sharp bends, leading to trauma of the joint surface.

Mild trauma can involve the synovial membrane and articular cartilages, and in severe cases damage to the articular surface is accompanied by changes in the nutrient synovial fluid. This means the cartilage never repairs properly and the destructive process is increased every time the dog runs.

As the degeneration continues, the joint progressively loses flexibility and the dog becomes chronically lame. At this stage X-Rays reveal erosion of the articular surface and osteophyte formation. In severe cases one can feel crepitus, the dog will check on the bends or walk off the track lame.

Treatment of the Chronic Wrist

1. Rest and reduce the frequency of races.
2. Cold compresses or hosing.
3. Topical anti-inflammatory agents after each run - the best is Movelet Gel.
4. Magnetic foil strapped to the area - useless.
5. Pulsed alternative magnetic field therapy - value very doubtful.
6. Ultrasound is often effective after a run. The limb is held in a pail of water at 0.5 watts per square cm, 5 minutes at a time, on 5 consecutive days. Needless to say, do not allow any direct contact between the head of the machine

and the dog's limb.

7. Unbelievably, thermocautery ("firing") is still occasionally used. Needless to say it is contra-indicated.
8. Direct application of laser therapy using a 660 or 950 probe - results are uncertain.
9. Acupuncture - this can relieve pain but there is no lasting beneficial effect on the joint itself.
10. Oral corticosteroids are contra-indicated. Of the non-steroidal anti-inflammatory preparations, piroxicam is the drug of choice being both effective and safe.
11. Intra-articular injections of corticosteroids are contra-indicated, but sodium hyaluronate is a very useful treatment in 60% of cases.

Other orthopaedic conditions

The hock of the greyhound is made up of seven bones and fracture of the central tarsal (usually in the right hock) is often accompanied by fracture of one or more of the other bones. There are a number of surgical procedures effect repair, but no matter how successful one is surgically, the patient is always left with some loss of flexibility leading to loss of pace and degenerative joint changes. Laser treatment, both direct and to acupuncture points, has a use in these cases.

Muscle injuries

A. Diagnosis

Lameness is by no means always present, but is mainly so in cases of severe strain to triceps, gastrocnemius, quadriceps, and tensor fascia lata.

Palpation and inspection of the edge and mass of each muscle is necessary to feel or notice a tear, bruising, swelling, tenseness or pain.

Diagnosis, usually by lay persons, using faradic stimulation is unreliable.

History is sometimes helpful eg. "*fast to the bend, checks, then runs on up the next straight*" - indicates a steering problem, perhaps in a shoulder. Another example is the chronic gracilis muscle causing the animal to slow down during a race.

The muscles most likely to be damaged are:

1. Shoulder and elbow

Brachiocephalicus,	
Supraspinatus	(extend shoulder)
Deltoid	(flexes and abducts shoulder)
Triceps	(extends elbow)
Biceps brachii	(flexes elbow)

2. Hind limb

Biceps femoris	(extends to the hip)
Semitendinosus	(extends to the hip)
Middle gluteal	(extends to the hip and abducts the hip)
Pectineus	(abducts the hip)
Gracilis	(abducts the hip and extends the hock)
Tensor fascia lata	(abducts the hip and extends the stifle)

Quadriceps femoris (extends the stifle)

Gastrocnemius (extends the stifle)

The degrees of damage can be divided into three stages.

Stage 1 Slight inflammation and bruising - this often requires careful examination for detection. Incidence: 90% of muscle cases.

Stage 2 More bruising, and tearing of fascia enclosing the muscle. Incidence: 7-8%.

Stage 3 Tearing of fascia plus tearing of muscle fibres and local haematoma.

Lameness is not common. Stages 2 and 3 can progress from Stage 1.

B. Treatment

Stage 1 injuries - Rest from track for 4-6 weeks, continue walking exercise and allow the dog to run in a paddock.

Control of haemorrhage - Some greyhounds have a delay in clotting time due either to genetic factors, previous medication (eg. Cotrimoxazole, Phenylbutazone) or Angiostrongylus infection. Useful treatments are: Vitamin K injection (20mg) followed by 5 days on Vitamin K tablets; the Homoeopathic preparation Arnica 200, 1 q.i.d. for 4 days; the specific anti-haemorrhagic agent Dicyclic (Ethamsylate) 250mg i/m injection, which reduces capillary bleeding.

If a haematoma persists drain it aseptically.

Suture gross tears, eg. in gracilis, with absorbable suture materials (cat-gut, Dexon, Vicryl).

Spasm can be treated, especially in the gastrocnemius, with Norflex tablets (Orphenhydramine citrate tablets 100mg) or Coproxamol which is cheaper and very effective.

Fibrosis can be reduced by oral Chymotrypsin (unhappily no longer on the market), Orgotein by injection, and very effectively by topical laser therapy.

Physiotherapy

The belated interest or lack of interest by the veterinary profession in all forms of physiotherapy has led to a procession of unqualified people treating their own animals with machines that are extensively marketed, quite a number of these people setting up in business in defiance of the weakly enforced Veterinary Surgeon's Act 1948. The latest craze is to buy laser machines, and as with ultra-sound and magnetic field therapy there is a situation where people with no training are applying their machines to animals without the aid of veterinary diagnosis.

I was introduced to the concept of acupuncture by a BMAS member, Dr Ivor Moss, and after an initial flirtation with a small hand-held machine, I invested in a Fetouris Photon Laser, which is now an essential tool in my practice.

This instrument gives one the choice of Gallium Arsenide probes of 660 nm. and 950 nm.

wavelength, and a cluster diode probe (Multilux) which contains probes of both wavelengths and is suitable for the treatment of large areas.

I use the instrument in two ways:

1. Direct application to injured tissue.

The Multilux is very useful for reducing inflammation and fibrosis in many muscles, especially those of the shoulder, tensor fascia lata, quadriceps and gastrocnemius.

Both probes and the Multilux have been shown to be very successful in treating Achilles tendon injuries and those of the flexor carpi ulnaris. However treatment of the superficial digital flexor tendons is followed by recurrence of the injury once the dog is returned to racing.

The probes have been useful when applied to hock ligament injuries and some chronic toe injuries. The general rule seems to be that the 950 nm. probe and Multilux are preferable for chronic injuries and the 660 nm. for acute injuries.

2. My use of acupuncture has been more limited.

The laser probe provides a quick, painfree and aseptic method of point stimulation, and has, I feel, most future in the treatment of chronic hip and shoulder injuries.

I have some misgivings about the use of laser acupuncture in racing greyhounds. Acupuncture is of course a great pain reliever, but once a

greyhound is painfree he or she will not understand if you say "just jog around the paddock" the way you would to a human athlete. It is for this reason that the Australian veterinary surgeon, David Gilcrest, who has produced an interesting manual on greyhound acupuncture, notes that it is not advisable to use an acupuncture treatment 48-60 hours before a race. I would go further and suggest that its use is confined to greyhounds who are resting off the racing strength. The use of painkilling drugs in racing dogs is quite rightly prohibited by the National Greyhound Racing Club for at least seven days before a trial - I am sure this should apply to acupuncture as well.

Other treatments

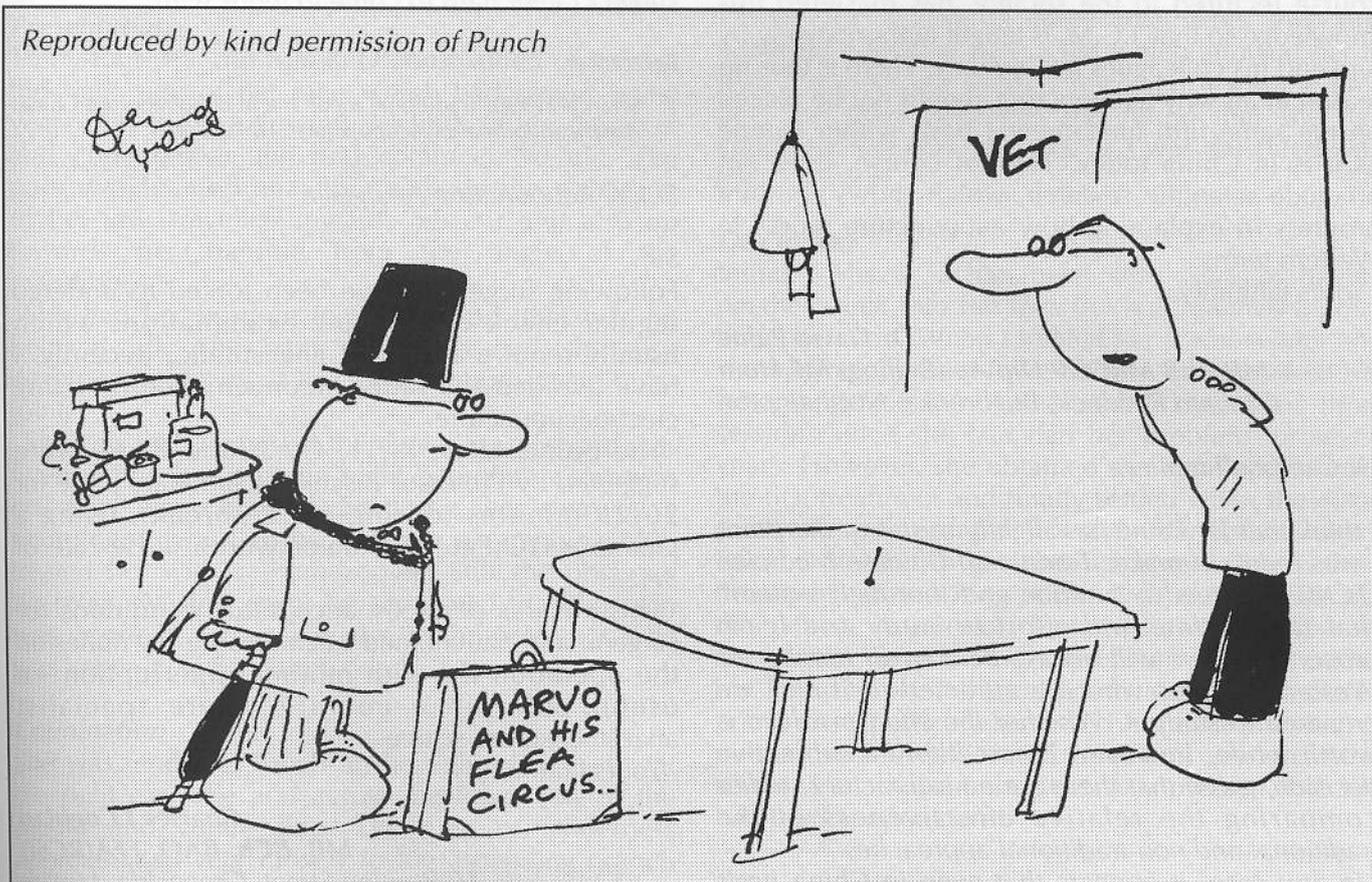
Ultra-sound and Magnetic Field Therapy both reduce inflammation and hence time off the track with lameness.

Hydrotherapy is particularly popular with Australian trainers, and swimming is a very useful and good training aid enjoyed by 50% of greyhounds.

Finally a simple massage and a skilled pair of hands can often be useful, but as I become older I increasingly believe so much in the adage "give him a little Tincture of Time!"

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"No promises - it's the first time I've tried acupuncture."



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Acupunct Med 1991 9: 35-39
doi: 10.1136/aim.9.1.35

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