

IGSRV

International Group of Specialist Racing Veterinarians

Newsletter May 2013

ICRAV Mauritius September 2014

Now is the time to start planning your presentation. It is particularly important that those who have not presented before take this opportunity to be involved.

However, we recognise that the preparation of presentations may be a new experience for many of us. For that reason, we want to provide all the help you need to get your presentation up and running. If you need some technical help, the IGSRV can supply it. We have people who can provide help with:

- Statistics
- English
- Access to scientific literature
- Planning/presentation.

We have space on the program; so please start thinking about what you can do. If you'd like to hear a presentation on a particular topic (e.g. about Standardbreds) how about doing the reading, asking the questions and becoming the expert on that topic, then sharing your expertise with your colleagues?

Please propose a paper now, and let us know what assistance you need to prepare it.

Send you expressions of interest to:

Peter Symons kptg@globaldial.com

Peter Knight peter.knight@sydney.edu.au

and include any requests for help.

Can you help? Requested topics for ICRAV 2014

- Welfare
- Medication issues including Permitted Medication
- Predicting/Preventing Injury
- Autopsy research/findings
- Retirement initiatives (ThoroughbredConnect / Turning for Home)
- Catastrophic Injuries / Trainer Responsibility
- Standardbreds
- Video analysis, to establish causation, of race-day fatalities
- Teaching/continuing education for race track practitioners
- Media training for Regulatory Veterinarians (welfare issues etc)
- Handling the seriously injured horse
- Converting Injury Prevention principles into practice
- Heritability estimates for EIPH, laryngeal hemiplegia etc.
- Collecting drug-control samples from dead/euthanased horses - how and why?
- Shoeing
- Comparison of injury recording/prevention between countries
- Definitions of treatable injuries at racecourses
- Peptide hormones/biomolecular issues/gene doping
- Immunocastration
- Available thresholds/withdrawal times for standard treatment drugs (3)
- Discussion/review on detection times, withdrawal times, other pharmacological issues
- Drug administration studies ...
- Working with Stewards
- Risk-analysis based strategy development



IGSRV Subscription

In recognition of the usual (biennial) ICRAV conference dates, and in an effort to simplify the subscription / payment process, please note: with immediate effect, the IGSRV subscription period will change from an annual subscription, with payment due on 1 January, to a new subscription period of September to September, with two payment options / subscription periods offered –

1. For members who wish to pay on an annual basis:

Payment will only be accepted through the Paypal system, with an annual subscription fee of US\$50 for the period of September to September.

2. For members who wish to make a cash payment at the ICRAV conference:

The minimum subscription period is ICRAV to ICRAV, or 24 months, at US\$100.

IFHA Horse Welfare Committee Update

Tim Morris

There are two important items of interest to IGSRV members

First, Article 6 of the IFHA International agreement has been extensively revised. Added to the measures for medication control are horse welfare, prohibited practices, genomic modification, medication practices and the relationship between vets and trainers. Much of this stems from work of the IGSRV. The new article will be published (1) for ratification by individual racing authorities shortly.

Second, following much background research, the ICRAV meeting in Philadelphia and a survey of IGSRV members the Committee proposed that a 14 day stand down period was required as the current practical method of choice for the medication control and welfare management of horses treated with intra-articular corticosteroids. This is a major change of approach, and after initial discussion at the IFHA in March it will be discussed in full at their meeting in October this year.

¹ <http://www.horseracingintfed.com/racingDisplay.asp?section=6>

Proposed approach by the International Federation of Horseracing Authorities (IFHA) to address welfare issues in control of corticosteroid medication given into equine joints before racing.

Introduction

Corticosteroid medications are synthetic analogues of the the bodies own hormone cortisol. These medications are potent, they can have profound beneficial anti-inflammatory effects, but also unwanted detrimental side effects such as reduction of healing processes.

These medications have been in use for many years in veterinary medicine, In recent year in equine veterinary medicine they have increasingly commonly used by direct injection on the joints of horses. Such direct administration into the area requiring treatment also produces effects at lower doses than if given the the horse by injection in muscles, or by mouth.

However as the use of corticosteroid medications has become more widespread concerns on their excessive use have also increased. These concerns range from decreased healing rates in injured cartilage, whether their use allow unfit horses to race, to whether they are the cause of excess breakdown rates that result in loss of use or death of the horse.

Excessive use and abuse of corticosteroid medications given into equine joints

Much of these concerns stem from growing anecdotal evidence from regulatory veterinarians. There have been high profile cases of breakdowns of individual horses or groups of horses in North America where retrospective review of clinical records have shown dosage regimens that would seem on informed clinical judgment to be incompatible with a fit and healthy horse.

Whilst these events may be the worse cases scenarios concerns are not confined to such medication use or abuse in North America. Overuse and abuse of corticosteroid medication into the joints in thoroughbred racehorses was discussed at the recent International Conference of Racing Analysts and Veterinarians in 2012 and also a gathering of members of the International Group of Specialist Racing Veterinarians (IGSRV) in Hong Kong held in December 2012.

A world wide survey of IGSRV members was then conducted to obtain views following the Hong Kong meeting. which confirmed members worldwide are very concerned about the problem and are of the opinion that much of the current administration of intra-articular medication to racehorses is done without proper diagnosis and without proper modification of training and racing regimes to the detriment of the welfare and long term health of the racehorse.

To complement this widespread but anecdotal opinion a recent study of around 2000 racing thoroughbreds examined the relationship between local administration of corticosteroid medication into joints tendons or muscles and a subsequent musculoskeletal injury (defined as any limb injury following which the horse was rested, and did not race for at least 6 months, or was retired). The study found that thoroughbred racehorses receiving such corticosteroid treatments suffer musculoskeletal injuries at approximately 4.5 times the rate of horses not receiving treatment, and for horses receiving multiple treatments the rate is approximately twice that of horses receiving single treatments. This study is considered well designed and conducted, although it shows a clear

association between treatment and injury it should be pointed out it does not show a definitive cause and effect between joint treatment and breakdown.

Overall the IGSRV and the IFHA Horse Welfare Committee consider that there is clear evidence of use, excessive use and abuse for corticosteroid medications into equine joints, to varying degrees around the world. Furthermore, beyond the existing requirements for medication control, such practices and the current understanding of medication use and of risk, require effective control to protect horses, jockeys, integrity and the reputation of horseracing.

Control of corticosteroid medications given into equine joints by chemical analysis of samples.

The standard approach to medication control involves prohibition of substances and the practical implementation of analysis for such substances using screening limits to control sensitivity. The need for such sensitivity control is to avoid findings of therapeutically irrelevant levels of medication. This approach set out in Article 6 of the IFHA International Agreement.

However recently work has been conducted in Australia, France, Great Britain and the United States to understand the levels of corticosteroids in blood, urine and joint fluid following administration of corticosteroid drugs to horses by a variety of routes including by injection into the joint. There has been an effective international cooperation to jointly analyse and understand this work.

The conclusions reached at that at this time include:

- Levels of corticosteroid medication remain in joint fluid for a considerable period, likely to be at least several weeks, after injection into the joint.
- Levels of corticosteroid drugs that remain in joint fluid are 100-1000 times higher than simultaneously found in blood or urine.
- At the current time we have limited information on therapeutically relevant levels of corticosteroids in the joint, but the levels found in the joint are those that would be of concern if found in the body as a whole.
- Work continues in Great Britain, Japan and the United States to understand the relationship of levels of corticosteroids in the joint to treatment needs and injury rates.

As noted, levels of corticosteroid drugs that remain in joint fluid are 100-1000 times higher than simultaneously found in blood or urine. Those levels, after a significantly shorter period than the persistence of the higher levels in the joint, decline to such an extent, that current routine analytical methods are inadequate at the present time. As such the use of routine blood or urine screening will not, at present, detect that the joints still contain possibly significant levels of corticosteroids.

It should be noted that this analytical situation is also as recognised by the IFHA's Advisory Council on Prohibited Substances & Practices.

Alternative approach to the control of corticosteroid medications given into equine joints

Article 6 of the International Agreement, as well as requiring the absence of prohibited substances, now is also proposed to include explicitly adherence to welfare standards, and specifically:

- “Horses that are not trainable as a result of injury or disease must be taken out of training and given appropriate veterinary treatment. Medication must not be used to enable an injured or diseased horse to be trained.”
- “The trainer must respect the mandatory horse rest period as enforced by the Horseracing Authority for specific drugs or treatments.”

Therefore an alternative approach is to introduce a “standstill” period following the injection of a corticosteroid into a horse before racing. Such an approach to control would be compatible with the proposed Article 6, and reflect much current practice. In some North American jurisdictions this period in Rules of Racing is 7 days, in France it is 14 days and in some Scandinavian countries 28 days. In other countries guidance to trainers is similar, such as 14 days in Great Britain.

Implications of the introduction of a standstill period approach

The effective implementation of a standstill approach has implications for the IFHA as well as individual member racing authorities.

For the IFHA, as noted above, the proposed article 6 includes the requirement that “The trainer must respect the mandatory horse rest period as enforced by the Horseracing Authority for specific drugs or treatments.” The IFHA could consider the publication of definitions and actual standstill times on their website, as they have recently done for International Screening Limits. Such an approach would encourage harmonisation and inform all racing authorities.

For racing authorities the enforcement of a standstill approach requires requirements for medication records, a system to review these records, and usually out of competition testing to ensure compliance.

It may also be necessary to review the jurisdiction’s Rules both to introduce standstill periods but also ensure such that the liability that exists for the finding of a prohibited substance by chemical analysis is also present when the standstill is violated as demonstrated by out of competition testing and or inadequate medication records.

In addition it is likely that an education programme for trainers and their veterinarians will be required as such new approaches are introduced.

Finally a standstill approach will also be necessary for other drugs where either levels are too low or analytical methods do not exist. Again this further development of the the standstill approach would suggest that the IFHA should take a lead in harmonisation and set the principle that recommended standstill time be publicised on the IFHA website as they are developed or altered.

Recommendation

The IFHA Horse Welfare Committee recommends that in line with the proposed changes to Article 6, that the IFHA promotes, where necessary, the standstill approach to control the used of corticosteroids in equine joints for both medication control and welfare assurance.

The IFHA should be aware that standstill times will change as knowledge develops that it should encourage the further development development of harmonised International Standstill Times (ISTs)

by informed consensus as now being one for International Screening Limits (ISLs) and this work is publicised on the IFHA website in a similar manner to that recently done for ISLs.

To accommodate the existing variations, but also recognised informed consensus based on welfare considerations the Committee recommends that the IFHA website defines the operations a standstill period as:

“Following any therapy given to a horse in training, a sufficient period, which for some specific medications can be defined as an International Standstill Time (IST), should elapse prior to racing such that the therapy is not detrimental to its welfare. Such ISTs should be supported by review of medication records and out of competition testing necessary as considered necessary by each racing jurisdiction”

and provides as the first Harmonised International Standstill Time

“Corticosteroids: 14 days unless otherwise advised by each racing jurisdiction.”

It will be important that use of IST is carefully coordinated with the use of ISLs so as to avoid conflict and confusion. This can be achieved by cooperation of the IFHA’s Advisory Council on Prohibited Substances & Practices and its Horse Welfare Committee

Tim Morris

Chair

March 2013

IGSRV Discussion Paper on the Control of Intra-Articular Corticosteroids in Racehorses

24 December 2012

The purpose of this paper is to:

(i) Inform members of the outcomes of a recent discussion on the use and abuse of intraarticular corticosteroids in racehorses held by a number of IGSRV members in Hong Kong on the 11th December 2012.

(ii) Request feedback from members on the regulatory proposals arising from this discussion with a view to submitting a report to the International Federation of Horseracing Authorities (IFHA) Welfare Committee for their consideration and for possible submission to the March 2013 meeting of IFHA Executive Committee (EXCO).

Attendance at the Meeting

The following IGSRV members attending the meeting in person or by teleconference:

Ted Hill (USA), John McCaffrey (AUS), Lynn Hillyer (teleconference) (UK), Peter Curl (HK), Kanichi Kusano (JAPAN), Kenneth Lam (HK), Christopher Riggs (HK), Brian Stewart (AUS), Paul Marie Gadot (FRA), Roland Devolz (IFHA), S L Karthikeyan (IND), Youssef Kassab (Qatar) Koos Van den Burg (SING), Eugene Reynders (MACAU).

Background

The overuse and /or inappropriate use of intra-articular corticosteroids, especially their use to mask the signs of inflammation associated with conditions associated with incipient skeletal failure, palmar osteochondral disease (POD), advanced osteoarthritis and / or any condition in which the

implementation of an appropriate treatment and rehabilitation regime may allow healing of an injury is an important and emerging racehorse welfare and safety issue. The racing industry faces an existential threat associated with changing societal attitudes to the use of animals for entertainment purposes.

It is critical that the industry addresses the problems caused by the use of medication in attempts to continue the training and racing of horses suffering from injuries and degenerative conditions to the point that both the safety and welfare of horses and riders is compromised.

Key Points made during the Meeting

The following points were made during the meeting:

- (i) When used appropriately, intra-articular corticosteroid therapy is a very valuable means of managing inflammatory joint disease.
- (ii) Racehorses are professional athletes and it is inevitable that some will suffer joint injuries that will interrupt training and will require appropriate treatment.
- (iii) As a matter of principle, result of over-stress and which compromise the health and safety of the racehorse.
- (iv) The economic realities of the racing industry mean that the temptation to use medication to mask the signs of injury and /or degenerative conditions and to allow a compromised horse to continue in training and racing are very strong.
- (v) Trainers, racetrack practitioners and owners often argue that the use of intra-articular corticosteroids is necessary to help the horse cope with the extreme demands of training and racing and is necessary to maintain the economic viability of horse ownership. This argument is an example of the attitude that the horse must be pharmacologically adapted to the demands of the industry rather than the industry adapting its demands to the physiology of the horse.
- (vi) Experienced racetrack veterinary practitioners are responsible and best placed to ensure that quality veterinary services are provided to equine athletes. However the commercial pressures of the very competitive racetrack practice business mean that it may be difficult for practitioners to provide quality care that it is always in the best interests of the health and welfare of the racehorse. Practitioners may be placed in the situation of having to perform a procedure demanded by the trainer or risk losing business to a competitor.
- (vii) The control of intra-articular corticosteroids by the analytical testing of race-day samples cannot provide an appropriate level of control because of the short detection times of several potent corticosteroids and their prolonged duration of effect.

Conclusions

The consensus of the meeting was that:

- (i) The use of intra-articular corticosteroids to mask signs of inflammation is a significant threat to the safety and welfare of the racehorse and by extension to the racing industry.
- (ii) The industry cannot rely on the professionalism and ethical conduct of racetrack veterinary practitioners alone to ensure that intra-articular corticosteroid therapy is always administered in the best interests of the racehorse.
- (iii) Current analytical techniques applied to race-day samples cannot provide the appropriate level of control alone.
- (iv) Other methods of control must be developed.

Alternate Control Policies

Two racing authorities have introduced controls based on a compulsory stand down period after the administration of intra-articular corticosteroids.

(i) NYRA has instituted a policy which requires that all intra-articular injections must be reported to the authority and that a compulsory seven day stand down period (15 days for methyl prednisolone acetate) must be observed before the horse races.

(ii) France Galop has instituted a policy which requires a compulsory, minimum stand down period of 14 days must be observed after an intra-articular injections. The control of corticosteroids with detection times that are greater than 14 days is still achieved by the analytical testing of race day samples.

The HKJC has instituted a policy which requires that prior to administration of an intraarticular corticosteroid injection a horse must undergo a thorough clinical examination and a radiographic examination of the specific joint and that the treatment may not be repeated within four weeks. A compulsory stand down period from racing after treatment appears to be the only practicable means of providing an appropriate standard of control of intra-articular corticosteroids in most jurisdictions.

Enforcement of a Compulsory Stand-Down Period

Compulsory stand down periods are problematic if they cannot be robustly and consistently enforced.

Enforcement of a ban on intra-articular corticosteroids would require:

(i) Compulsory reporting of treatments and / or inspection of stable medication records and, if necessary, veterinary records.

(ii) Out of competition testing for corticosteroids in the pre-race period combined with auditing of medication records.

(iii) Strong deterrent penalties for trainers with the possibility of reporting veterinary practitioners who administer treatments within the stand down period to the local Veterinary Surgeons Board for disgraceful conduct.

Other Intra-Articular Medications

A number of other medications may be administered intra-articularly to reduce inflammation, to provide analgesia and to help in maintaining articular cartilage. Examples include Interleukin 1 Receptor Antagonist Protein (IRAP), Sodium Hyaluronate (HA), Glycosaminoglycans (GAG) and Substance P blockers. IRAP, HA and GAGs are reported to assist healing of inflamed joints and their appropriate medical use should be encouraged, however they do have anti-inflammatory actions and some form of control prior to racing is appropriate. This issue was not discussed at the Hong Kong meeting but the input of IGSRV members on the control of these medications will be sought. The intra-articular use of Substance P blockers such as 'Sarapin' or Ammonium Sulphate is undetectable and is a particular welfare and safety concern. A ban on the intra-articular injection procedure for a specified period may be the only means to attempt to achieve control but would be limited by the difficulties associated with enforcing a ban.

Proposed Recommendation to the IFHA Welfare Committee

A survey of IGSRV members will be conducted during late December 2012 / early January 2013 to obtain comment and feedback on proposals to regulate the use of intra-articular corticosteroids and other medications.

The current proposals developed at the December 2012 Hong Kong meeting are that the IGSRV recommend the following to the IFHA Welfare Committee for consideration;

(i) That the administration of intra-articular corticosteroids be controlled by a minimum 14 day stand down period from racing after treatment.

- (ii) That the stand down period be enforced by medication records, veterinary practice records and non-raceday sampling and analysis for corticosteroids.
- (iii) That Racing authorities be recommended to ensure that strong deterrent penalties are applied to any breaches of the stand down period.
- (iv) That the control of other intra-articular medications be considered by the Committee.
- (v) That a recommendation on the control of intra-articular corticosteroids and other medications be made to the IFHA EXCO meeting in March 2013.

Yours sincerely

Dr Brian D Stewart BVSc (Hons) MBA

Chairman

Survey on Anabolic Steroid Use

Kanichi Kusano

Following publicity regarding the anabolic steroid (AS) positives in UK, there were requests from IGSRV members to conduct a survey regarding AS use and status of out of competition testing. Sixteen jurisdictions kindly responded to the questionnaire and the summary is below. Thank you very much for those who have contributed. Please note that the information is as at 1st of May.

Country (State)	Are they banned completely?	Do you allow the use of AS outside of competition ?	Are there any conditions that you allow the use of AS?	Do you do outside competition testing?	Sanction for outside competition testing positives
UK	Yes	No	No	Yes	Trainer: licence suspension for up to 10 years. Horse: banned from entries for 6 months.
France	Yes	No	No	Yes	
Austria	Yes	No	No	Yes	
Norway	Yes	No	No	Yes	Serious penalty if it is proven that the medication was done while on the training list. A horse that once tested positive for AS will get lifetime suspension.
Canada	No	Yes	Yes	Yes	No penalty
USA New York	No	Yes	Yes	Yes	Substantial
USA Delaware	No	Yes	Yes (Illness but not in racing)	Yes	Put on the veterinary list, retested until negative test and not allowed to race before.
Argentina	No	Yes	Yes	No	
Australia	No	Yes	Yes (permitted in training and spelling)	Yes	No penalty
New Zealand	No	Yes	Yes (permitted in training)	Yes	No penalty
United Arab Emirates	No	Yes	Yes (permitted in training and spelling)	Yes	No penalty
South Africa	No	Yes	Yes (Allowed in Training)	Yes	
Hong Kong	No	Yes	Yes (With clear and valid clinical indication)	Yes	
Singapore	No	Yes	Yes (With clear clinical indication)	Yes	
Japan	Yes	No	No	No	

The Japan Racing Association Stabling System

Fumiaki Mizobe, Kanichi Kusano (Japan Racing Association)

Introduction

Proper management of scheduled racehorses is critical for racing integrity. According to the Japan Racing Association (JRA) Rules of Racing, all scheduled horses must be stabled in facilities managed by the JRA. Runners are stabled and trained at the Miho Training Center (TC) or Ritto TC which are under the control of JRA officials. This report reviews the merits of the JRA's stabling system.

Training Centers –History–

In 1954, the JRA was organized to operate national horseracing by the enactment of the Japan Racing Association Law. At that time, racing and training were conducted at the same tracks, which were all located in cities. As those cities became more urbanized, public concerns about the disposal of stable waste grew stronger. For this reason, the JRA started to consider relocation of the horses to rural training facilities. This was addressed the issue of limited on-track stable capacity, and provided an opportunity to introduce variety to the types of tracks available for training.

In 1969, the Ritto TC was established in western Japan as the first official JRA TC. Nine years later, the Miho TC was built in the east of Japan. These TCs offer turf, dirt, wooden, synthetic, and uphill tracks. They also spare racetracks from the damage caused by daily workouts. TCs are also equipped with facilities such as swimming pools, water treadmills, and racehorse clinics offering both veterinary and farriery services. It takes no more than two hours by horse van to get to the nearest racecourses. This enables the horses to be transported in the morning to the racecourses on racedays and return on the same day after racing.

Training Centers –Stalling Capacity–

Both Miho and Ritto TCs can house over 2,000 racehorses. They are managed by approximately 100 trainers. In TCs, each trainer is allocated an average of 20 stalls, although technically this could vary among trainers from 10 to 28 stalls depending on the past performance of the trainers (called the 'Merit System'). Stables available at TCs do not meet demand, so trainers also keep their horses at private training farms. These remote horses are moved to the TC as soon as stabling becomes available. Under the current agreement between the JRA and the trainers, one trainer can take charge of up to three times as many horses as the number of stalls allocated to the trainer in TCs. Popular trainers are therefore required to efficiently rotate their horses into and out of TCs.

Advantages in Medication Control

According to "Matters to be Instructed by Veterinary Officers", all drugs, feeds, and feed additives must be examined by the testing lab before use in order to determine that they are free from prohibited substances. Only private practitioners authorized by JRA, or official veterinarians are allowed to administer drugs to horses in TCs. All the medical records in TCs are stored in an internal computer system (database). The stored data are open to all official veterinarians and they are available anywhere online. In addition, the computer system automatically excludes horses from declaration for races if they have been recently administered prohibited substances. The private

veterinarians are obliged to submit their medical records to the JRA, and they are subject to careful review by the official veterinarians. Whenever they start using new drugs inside TCs, they must get approval from official veterinarians. This kind of thorough guidance to the private veterinarians has contributed to minimizing drug violations. All horses who wish to run a race must be stabled for certain period of time in JRA premises prior to the race. This period of compulsory stabling is 15 days for unraced horses and 10 days for previous starters. This period helps to maximise clearance drugs that have been administered outside of TCs.

Disease Control in TCs

The current stabling system has some important benefits for infectious disease control. For example, horses entering TCs are all subject to quarantine for a prescribed period of time. During this period of quarantine horses undergo clinical examination and vaccination by official veterinarians. The horse's identity must also be verified before it is admitted to be stabled. This careful quarantine procedure has been effective in preventing infectious diseases from entering TCs.

Even under such strict a quarantine system, outbreaks of epidemic diseases have occurred in TCs. The most recent one was the outbreak of Equine Influenza (EI) in 2007. When the first positive case was reported, a strict movement ban was issued to minimize its further spread. In 2009, Japan was officially declared free of EI, and no positive cases of EI have been reported since.

Pre-race Veterinary Exam

To assure the integrity of racing, JRA officials, such as stipendiary stewards, handicappers, starters or veterinarians observe daily training in TCs. All training in TCs is considered an official workout, and official veterinarians inspect runners' soundness during training. Horses that are not sound enough to compete in races are excluded before race day. Horses with history of Exercise Induced Pulmonary Hemorrhage (EIPH) and Atrial Fibrillation (AF) must pass a veterinary examination before declaration. Furthermore, horses that have the recent history of serious injuries such as fracture and tendonitis are also subject to the compulsory exam in TCs. The veterinarians conduct gait analysis of the horses scheduled to for the first time after the occurrence of those injuries. Horses racing after an absence of 6 months or more 6 months or more are also subject to this official pre-race clinical exam.

Utilizing Information during Stabling

The stabling system enables information on the training of scheduled runners to be publicised thorough mass media. Racing fans can access officially recorded workout times, videos and direct comments from trainers.

Statistical injury data during training is utilized to analyze the cause of accidents and to take preventative measures. Such data has been collected for over the past 30 years and it has been carefully reviewed both by veterinarians and track superintendents to minimize the risk of injury. By holding workshops occasionally, these results are shared with trainers as well.

Recent Changes

Recently, in response to the request from owners, the stabling period in TCs has been decreasing. Although it is hard to attribute this change to any single reason, Japan's prolonged economic downturn is surely relevant. With contracting budgets, horse owners have begun to seek reliable, but cheaper training facilities outside TCs. To meet this need, private training farms equipped with good facilities have increased around TCs. The staff in such farms are becoming well trained and their riding skills are improving. If these trends continue, the JRA may reconsider the current stabling system. It is always important to seek the better way of doing things, so these trends should continue to be carefully monitored.

Changes to the medication control system in Japan

Fumiaki Mizobe, Kanichi Kusano (Japan Racing Association: JRA)

1. 2013 Updates on List of Restricted Drugs in JRA

Effective April 1, 2013, the JRA updated the list of 'Restricted Drugs'. The following 7 drugs: Aminopyrine, Antipyrine, Sulpyrine, Phenacetin, Phenylbutazone, Flufenamic acid and Mefenamic acid have been added to the list of Restricted Drugs. Shown below is the revised list with the 7 newly listed drugs underlined.

LIST OF RESTRICTED DRUGS (As of April 2013)

1 Glucocorticosteroids (Cortisone, Dexamethasone, Triamcinolone, Triamcinolone Acetonide, Hydrocortisone, Fludrocortisone, Prednisolone, Betamethasone, Methylprednisolone, and other substances with similar chemical structure or similar biological effect(s))

2 Non-Steroidal Anti-Inflammatory Drugs (Aspirin, Acetaminophen, Acemetacin, Aminopyrine, Antipyrine, Ampiroxicam, Amfenac, Isopropylantipyrine, Ibuprofen, Indometacin, Ethenzamide, Etodolac, Etoricoxib, Epirizole, Emorfazone, Eltenac, Oxaprozin, Oxyphenbutazone, Carprofen, Glycyrrhizinate, Ketophenylbutazone, Ketoprofen, Ketorolac, Salicylamide, Sodium Salicylate, Methyl Salicylate, Zaltoprofen, Diclofenac, Dimetotiazine, Sulindac, Sulpyrine, Celecoxib, Tiaprofenic acid, Tiaramide, Tenoxicam, Tepoxalin, Deracoxib, Tolfenamic acid, Nabumetone, Naproxen, Valdecoxib, Piroxicam, Firocoxib, Phenacetin, Phenylbutazone, Felbinac, Bucolome, Pranoprofen, Flunixin, Flufenamic acid, Flurbiprofen, Proglumetacin, Vedaprofen, Meclofenamic acid, Mefenamic acid, Meloxicam, Mofezolac, Loxoprofen, Lornoxicam, Neurotropin, and other substances with similar chemical structure or similar biological effect(s))

For detail on Japanese medication control policy, please refer to IGSRV Newsletter published in March 2012 and following website:

<http://japanracing.jp/en/information/jra-rules/veterinary.html#c01>

2. Mandate to Report Intra-Articular Drug Administration

From April 1st, the JRA has implemented the new policy to encourage proper use of intra-articular (IA) medication. Veterinarians are obliged to submit a report when they have carried out IA medication with the name of drug, dose, name of the joint and dates of administration.

Research review

Hoffman, C. J., & Clark, C. K. (2013). Prognosis for Racing with Conservative Management of Cervical Vertebral Malformation in Thoroughbreds: 103 Cases (2002–2010). Journal of Veterinary Internal Medicine. 27: 317–323

This study examined the records of 87 thoroughbreds presumptively diagnosed with CVM and treated conservatively between 2002 and 2010. Its aim was to determine which radiographic findings and neurologic exam findings have an effect on these horses achieving athletic function when managed conservatively. Racing records were reviewed retrospectively to determine which horses raced after treatment. Thirty-three horses were euthanized after diagnosis, while the remaining seventy were discharged for treatment. Twenty-one of 70 horses treated medically (30%) went on to race. Horses that went on to race had a significantly lower neurologic grade ($P = .0002$), with a median of 1.0 in the thoracic limbs and 2.0 in the pelvic limbs. Euthanized horses and nonstarters were more likely to have kyphosis ($P = .041$) or cranial stenosis ($P = .041$) on standing lateral cervical radiographs. The authors concluded that some horses can race after the diagnosis of CVM.

Williams, KJ, Robinson, NE, DeFeijter-Rupp, H, Millerick-May, M, Stack, A, Hauptman, J, Derksen, FJ. (2013) Distribution of venous remodeling in exercise-induced pulmonary hemorrhage of horses follows reported blood flow distribution in the equine lung. J Appl Physiol 114: 869–878.

Remodeling of pulmonary veins (VR) in equine EIPH was recently described, suggesting that it contributes to the pathogenesis of the disease. The cause of VR is unknown. We tested the hypothesis that the development of VR follows pulmonary blood flow distribution, preferentially occurring in the caudodorsal lung region. The lungs of 10 EIPH-affected horses and 8 controls were randomly sampled for histopathology and blindly scored for presence and severity of VR, hemosiderin (H), and interstitial fibrosis (IF). Mean sample score (MSS), mean lesion score, and percent samples with lesions were determined in four dorsal and three ventral lung regions, and the frequency, spatial distribution, and severity of lesions were determined. MSS for VR and H were significantly greater dorsally than ventrally ($P < 0.001$) and also decreased significantly in the caudocranial direction ($P < 0.001$). IF decreased only in the caudocranial direction. The percent samples with lesions followed the same distribution as MSS. VR often was accompanied by H; IF never occurred without VR and H. Similarity of the distribution of EIPH lesions and the reported fractal distribution of pulmonary blood flow suggests that VR develops in regions of high blood flow. Further experiments are necessary to determine whether VR is central to the pathogenesis of EIPH.

Nikolaidis, MG, Kerksick, CM, Lamprecht, M, McAnulty SR (2013) Does Vitamin C and E Supplementation Impair the Favorable Adaptations of Regular Exercise? Oxidative Medicine and Cellular Longevity. in press

Available evidence suggests that physiological adaptations to exercise training can enhance the body's ability to quench free radicals and circumstantial evidence exists to suggest that key vitamins and nutrients may provide additional support to mitigate the untoward effects associated with increased free radical production. However, controversy has risen regarding the potential outcomes associated with vitamins C and E, two popular antioxidant nutrients. Recent evidence has been put forth suggesting that exogenous administration of these antioxidants may be harmful to performance making interpretations regarding the efficacy of antioxidants challenging. The available studies that employed both animal and human models provided conflicting outcomes regarding the efficacy of vitamin C and E supplementation. Based on the contradictory evidence regarding the effects of higher intakes of vitamin C and/or E on exercise performance and redox homeostasis, a permanent intake of non-physiological dosages of vitamin C and/or E cannot be recommended to healthy, exercising individuals.

Hamilton, CJ, Reid LS, Jamal, SJ (2013) Organic nitrates for osteoporosis: an update. BoneKEy Reports 2, Article number: 259

Nitric oxide (NO) is a novel agent that has the potential to influence cortical bone, is inexpensive, widely available and has limited side effects. In this review, we will evaluate the in vitro and in vivo data that support the concept that NO is important in bone cell function, review the observational, case control and randomized trial data on organic nitrates and the effects of these agents on bone turnover, geometry and strength.

Liesegang, A, Huttenmoser, D, Risteli, J, Leiber, F, Kreuzer, M, Wanner, M. Influence of high-altitude grazing on bone metabolism of growing sheep Journal of Animal Physiology and Animal Nutrition 97: 58–66

The objective of this study was to identify the effect of high alpine grazing, associated with varying pasture grass qualities and more pronounced exercise on typically steep slopes, on bone metabolism by improving bone density and enhancing bone turnover in growing sheep. Twenty-four 5-month-old sheep were randomly assigned to two groups. One group was kept at high altitude (HA; 2000–2200 m a.s.l.) for 3 months, and the other group (C; control) remained in the lowlands (400 m a.s.l.). Both groups were kept in grazing pastures with access to good-quality swards. Before the start of the experiment, blood samples were taken, the sheep were weighed, and the left metatarsus of each animal was analysed by quantitative computer tomography. After 1 month, blood samples were taken and body weight was measured, followed by biweekly sampling. Finally, the animals were slaughtered, and the bones were collected for analysis of various bone parameters. Body weight development did not differ between the groups. Concentrations of 25-OH-Vitamin D, carboxy-terminal telopeptide of type I collagen and activities of bone-specific alkaline phosphatase were always higher in the HA group than in the C group, except on the last two sampling dates. Bone

mineral content and density increased in both groups during the experiment, but more intensively in the HA group. In addition, the cortical thickness of the HA group increased. The present study demonstrates an increase in bone turnover and mineral content of the bones of the growing sheep grazing in high alpine pastures. The factors associated with HA grazing, therefore, clearly seem to improve bone composition.

Voss, SC, Giraud, S, Alsayrafi, M, Bourdon, PC, Schumacher, YO, Saugy, Robinson, N. (2013) The effect of a period of intensive exercise on the isoform test to detect growth hormone doping in sports. Growth Horm. IGF Res. <http://dx.doi.org/10.1016/j.ghir.2013.03.006>

The objective of this study was to investigate the effects in 15 male athletes performed of a simulated nine day cycling stage race on growth hormone (hGH) testing using the World Anti-Doping Agencies hGH isoform differential immunoassays. The effects of circadian variation and exercise type on the isoform ratios were also investigated. Blood samples were collected twice daily over a period of 15 days (stage race + three days before and after). hGH isoforms were analysed by the official WADA immunoassays (CMZ Assay GmbH). All measured isoform ratios were far below the WADA decision limits for an adverse analytical finding. Changes in the isoform ratios could not be clearly connected to circadian variation, exercise duration or intensity. Conclusions: The study demonstrated that the hGH isoform ratios are not significantly affected by exercise or circadian variation and that heavy, long term exercise does not interfere with the decision limits for an adverse analytical finding.

Figueiredo, T, Dzyekanski, B, Pimpão, CT, Silveira, AB, Capriglione, LG, Michelotto PV. (2013) Use of Infrared Thermography to Detect Intrasynovial Injections in Horses. Journal of Equine Veterinary Science 33: 257-260.

This study investigated the ability of thermography to detect fetlock and middle carpal intrasynovial injections of bupivacaine hydrochloride in five mares. Saline injections were performed in the contralateral limbs. Thermographic evaluation was conducted at the dorsal and palmar aspects before (basal) and 15, 30, 60, 90, 120, and 1440 minutes after injection. The intrasynovial treatments resulted in increased limb temperature, with fetlock temperatures higher on the dorsal aspect at 15, 30, and 60 minutes and on the palmar aspect from 15 to 1440 minutes ($P < .05$) after the bupivacaine and saline injections. Increased carpal temperature was detected on the dorsal aspect at 60 and 90 minutes ($P < .05$). The present study demonstrates that thermography can be used to detect intrasynovial injections in horses.

Kocher, A, Burton Staniar, W (2013) The pattern of Thoroughbred growth is affected by a foal's birthdate. Livestock Science (2013), <http://dx.doi.org/10.1016/j.livsci.2013.03.008i>

Existing Thoroughbred growth data indicate that the long and short term patterns of growth are different based on when a foal is born, however this difference has not previously been quantified for bodyweight (BW) and withers height (WH). This study assessed the effects of day of birth (DOB), age, and day of year (DOY) on the short term pattern of growth using 35,044 BW measurements and

25,987 WH measurements from 2184 horses. Data were collected from 1977 to 2007 on farms located in the United Kingdom, Ireland and the United States. The DOB influenced the short term patterns of BW and WH growth over time, such that at specific ages or on particular DOY foals born in the first 60 days of the year grew differently from those born between DOY 91- 150. Early growth is more closely associated with age, while later growth may be more affected by environment.

Murase, H., Sakai, S., Kusano, K., Hobo, S., & Nambo, Y. (2012). Serum Zinc Levels and Their Relationship with Diseases in Racehorses. The Journal of veterinary medical science/the Japanese Society of Veterinary Science.

Zinc is one of the essential microelements involved in the regulation of enzyme activity, as well as metabolism of nucleic acid and proteins. There have been few reports on equine serum zinc concentrations during the training period, and little is known about the relationship between zinc levels and diseases in horses. In this study, we measured serum zinc levels in healthy Thoroughbred racehorses, as well as in other horses, under general disease or training conditions. The reference value for serum zinc levels in Thoroughbred horses was 41-79 g dl. There were no differences in serum zinc levels due to sex or age. Significant decreases in serum zinc levels were observed after training, but serum zinc levels did not vary with intensity of sweating. Serum zinc levels were lower in horses clinically diagnosed as having shipping fever (36.3 2.7 g dl), fever (45.3 3.0 g dl) and cellulitis (44.0 3.4 g dl), as compared to control values (59.7 9.7 g dl). They also tended to decrease in experimentally infected horses one day after inoculation. Changes in serum zinc levels reached nadir one day after surgical invasion, except for a horse that experienced complicating shock. These results suggest that zinc is a serological indicator of inflammatory status in Thoroughbred horses.

Shenoy, S., Chaskar, U., Sandhu, J. S., & Paadhi, M. M. (2012). Effects of eight-week supplementation of Ashwagandha on cardiorespiratory endurance in elite Indian cyclists. Journal of Ayurveda and integrative medicine, 3(4), 209.

The aim of the study was to find out the effect of Ashwagandha on the cardiorespiratory endurance capacity of 48 elite Indian cyclists. Cyclists were chosen randomly and were equally divided into experimental and placebo groups. The experimental group received 500 mg capsules of aqueous roots of Ashwagandha twice daily for eight weeks, whereas the placebo group received starch capsules. After eight weeks of supplementation, there was significant improvement in the experimental group in VO₂max and time to exhaustion measured during a treadmill test, whereas the placebo group did not show any change with respect to their baseline parameters. The authors concluded that Ashwagandha improved the cardiorespiratory endurance of the elite athletes.

Fulford, J., Winyard, P. G., Vanhatalo, A., Bailey, S. J., Blackwell, J. R., & Jones, A. M. (2013). Influence of dietary nitrate supplementation on human skeletal muscle metabolism and force production during maximum voluntary contractions. Pflügers Archiv-European Journal of Physiology, 1-12.

Dietary nitrate supplementation, which enhances nitric oxide (NO) bioavailability, has previously been shown to contribute to improved exercise performance by reducing both oxygen cost and energy expenditure. However, NO can lower force production in vitro. The purpose of this study was to examine the role of dietary nitrates in regulating force generation under normal physiological conditions. In a double-blind, randomized, crossover design, eight participants received 0.5 l/day of nitrate-rich (BR) or nitrate-depleted (PL) beetroot juice for 15 days and completed an exercise protocol consisting of 50 MVCs at 2.5 h, 5 days and 15 days after the beginning of the supplementation period. A significant reduction in Phosphocreatine (PCr) cost per unit force output was found for BR at end exercise ($P = 0.04$). These results indicate that, under normal physiological conditions, increased NO bioavailability is not associated with a reduction of force-generating capability in human skeletal muscle and confirm that nitrate supplementation reduces the PCr cost of force production.

Makanae, Y., Kawada, S., Sasaki, K., Nakazato, K., Ishii, N. (2013) Vitamin C administration attenuates overload-induced skeletal muscle hypertrophy in rats. *Acta Physiologica*. 208: 57–65

This study aimed to investigate the effects of vitamin C administration on skeletal muscle hypertrophy induced by mechanical overload in rats. The gastrocnemius and soleus muscles of the right hindlimb were surgically removed to overload the plantaris muscle. Vitamin C (500 mg kg⁻¹) was orally administered to the vitamin C-administered group once a day for 14 days. Synergist muscle ablation caused significant increases in wet weight and protein concentration of the plantaris muscle in both the placebo-administered ($P < 0.01$) and vitamin C-administered groups ($P < 0.01$) but the magnitude of plantaris muscle hypertrophy (expressed as a percentage of the contralateral plantaris muscle) was significantly smaller ($P < 0.01$) in the vitamin C-administered group (141%) than in the placebo-administered group (152%). Oral vitamin C administration can attenuate overload induced skeletal muscle hypertrophy, which may have implications for antioxidant supplementation during exercise training.

Sullivan, M. O., Gordon-Evans, W. J., Knap, K. E., & Evans, R. B. (2013). Randomized, Controlled Clinical Trial Evaluating the Efficacy of Pulsed Signal Therapy in Dogs with Osteoarthritis. *Veterinary Surgery*. 42: 250–254

The aim of this study was to evaluate the efficacy of pulsed signal therapy (PST) in reducing pain and increasing function in dogs with osteoarthritis (OA) using a randomized, blinded, controlled clinical trial. The study was a randomized, controlled, blinded clinical trial conducted using 60 adult dogs with moderate-to-severe clinical signs of OA. The control group received 1 hour of rest in hospital for 9 consecutive days and dogs in the treatment group received PST for 1 hour on 9 consecutive days. Goniometry and gait analysis were performed, and the Canine Brief Pain Inventory (CBPI) questionnaire was given to the owners to fill out without supervision. Outcome measures were repeated at the end of treatment (Day 11) and 6 weeks after beginning treatment (Day 42). The PST group performed significantly better than the control group as measured by the CBPI Severity and

Interference scores ($P < .01$). The group receiving PST performed better than the treatment group according to owner assessment.

Mørkeberg, J., Sharpe, K., Karstoft, K., & Ashenden, M. J. (2013). Detection of microdoses of rhEPO with the MAIIA test. *Scandinavian Journal of Medicine & Science in Sports*. 10.1111/sms.12049

The detection of recombinant human erythropoietin (rhEPO) is difficult and becomes more challenging when only microdoses are administered intravenously. Twenty three subjects were divided into two groups: EPO group ($n = 7$) and CONTROL group ($n = 16$). Seven urine and blood samples per subject were collected at least 5 days apart to determine within- and between-subject standard deviations in the percentage of migrating isoforms by the MAIIA test. Six injections of 50 IU/kg bw (boosting dosage) of epoetin beta (Neorecormon, Roche Diagnostics, Hvidovre, Denmark) were performed intravenously during a 3-week period, followed by two microinjections of only 10 IU/kg bw. Blood and urine samples were collected 2, 6, 12, and 72 h after the microinjection, as well as 72 h after the last boosting dose. Sensitivities and specificities of the MAIIA test were examined by absolute and passport thresholds. Sensitivity was 100% for at least 12 h after the microinjection, with ~30% of plasma samples still exceeding the 99.9% passport threshold 72 h after a microinjection. The specificity was higher for the passport approach compared to the absolute approach, but there were no differences in sensitivities between approaches or between specimens (urine and plasma). We conclude that the MAIIA test shows potential for detecting very small doses of rhEPO.

Wilson, G., Fraser, W.D., Sharma, A., Eubank, M., Drust, B., Morton, J.P., Close, G.L. (2013) Markers of bone health, renal function, liver function, anthropometry and perception of mood: A comparison between flat and national hunt jockeys. *International Journal of Sports Medicine* 34: 453-459.

This study tested the hypothesis that Flat and National Hunt (Jump) jockeys would display compromised health markers (bone health, vitamin D, liver and kidney function and mood) compared with established clinical norms, and that flat jockeys would be the worst affected. Daily energy intake was lower in Flat compared with Jump jockeys whereas there was no difference in urine osmolality. Serum total 25(OH)D was insufficient in Flat and Jump jockeys. Markers of bone metabolism (Plasma β -carboxy-terminal cross-linked teleopeptide (CTX) and Intact Parathyroid Hormone (PTH) and liver and kidney function were within clinical normative ranges although CTX and PTH were higher than average. Abnormal mood profiles were observed in both groups although significantly poorer in the Flat jockeys.

Higgins, M. F., Tallis, J., Price, M. J., & James, R. S. (2012). The effects of elevated levels of sodium bicarbonate (NaHCO₃) on the acute power output and time to fatigue of maximally stimulated mouse soleus and EDL muscles. *European journal of applied physiology*, 1-11.

This study examined the effects of elevated buffer capacity on maximally stimulated isolated mouse soleus (SOL) and extensor digitorum longus (EDL) muscles. The elevated buffering capacity was

achieved by administration of sodium bicarbonate and was equivalent level to that achieved in humans with acute oral supplementation. Maximal acute power output (PO) and time to fatigue to 60 % of maximum control PO were evaluated. Acute PO was on average 7.0 ± 4.8 % greater for NaHCO_3 -treated EDL muscles and 3.6 ± 1.8 % greater for NaHCO_3 -treated SOL muscles compared to CON. The acute effects of NaHCO_3 on EDL were significantly greater than on SOL. Although significant differences were not observed in whole group data, the fatigability of muscle performance was variable, suggesting that there might be inter-individual differences in response to NaHCO_3 supplementation. The authors state that their results present the best indication to date that NaHCO_3 has direct peripheral effects on mammalian skeletal muscle resulting in increased acute power output.

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INTERNATIONAL GROUP OF SPECIALIST RACING VETERINARIANS

(IGSRV) GUIDELINES

ARTICLE 1. NAME

The organization shall be called the International Group of Specialist Racing Veterinarians (IGSRV).

ARTICLE 2. AIMS

The aims of the IGSRV shall be:

- to act as an official association of veterinarians with similar special interests
- to advise authorities controlling horse racing and equine sports on veterinary matters relating, but not restricted to:
 - the regulation and control of use of drugs/prohibited substances in competing horses
 - the health and welfare of competing horses
 - the control of disease of horses
- to act in collaboration with the Association of Official Racing Chemists (AORC) both on a group and individual basis to achieve more effective regulation and control of the use of drugs/prohibited substances in horses
- to organize, in association with the AORC, meetings of the International Conference of Racing Analysts and Veterinarians (ICRAV)
- to promote veterinary science so far as it is concerned with the requirements of the rules of various controlling authorities
- to promote further research and gain knowledge on equine health, welfare, diseases, pharmacology and drug metabolism
- to promote international goodwill.

ARTICLE 3. MEMBERSHIP

Section 1.

Membership of the IGSRV shall be limited to:

- official veterinarians nominated by international, national or regional authorities controlling horse racing or other equine sports
- other veterinarians nominated by such authorities subject to approval by the IGSRV Executive Committee.

Section 2.

Each fully paid up member shall be entitled to vote at General, Special and/or Extraordinary Meetings, or by mail ballot as required at the discretion of the Executive Committee or by written request of seventy-five percent of the membership.

Section 3.

A member who has retired from employment and who has been a paid up member for a total of 10 years, and/or has served as an IGSRV Executive Committee member, is eligible for continued membership as “Member Emeritus” and is exempt from annual subscription payments, but has no voting rights.

ARTICLE 4. MEMBERSHIP SUBSCRIPTIONS

An annual subscription shall be paid by members to cover administrative costs and IGSRV projects. The amount of this subscription in any year shall be determined by the General Meeting and shall fall due on January 1 of each year. Members that have not paid their subscriptions will have their voting privileges suspended until such subscriptions are paid. The Executive Committee may, at its discretion, terminate the membership of individuals with more than two years of unpaid subscriptions.

ARTICLE 5. OFFICERS

The officers of the IGSRV shall be the Chairman, Vice Chairman, Secretary and Treasurer.

ARTICLE 6. ELECTION OF OFFICERS

Officers shall be elected by a majority vote of eligible members at a General Meeting of the IGSRV. Candidates shall be nominated and seconded from the floor of the General Meeting. Officers shall be elected for a length of service of four years with a possibility of re-election for further two-year terms.

ARTICLE 7. DUTIES OF OFFICERS

The duties of the Chairman shall be:

- to chair General, Special and Extraordinary Meetings of the IGSRV and the Executive Committee.
- to coordinate and supervise IGSRV activities
- to act as a member of the Executive Committee
- to act as veterinary representative on the Management Committee of the ICRAV.

The duties of the Vice Chairman shall be:

- to chair General, Special and Extraordinary Meetings of the IGSRV and the Executive Committee in the absence of the Chairman
- to act as a member of the Executive Committee.

The duties of the Secretary shall be:

- to act as custodian of IGSRV records, including membership records
- to keep the minutes of all General and Special Meetings
- to conduct IGSRV correspondence and notify members of all meetings and relevant events
- to review and report applications for membership at General Meetings
- to serve as secretary to the Executive Committee
- to act as a member of the Executive Committee.

The duties of the Treasurer shall be:

- to collect Member subscriptions as these fall due
- to keep proper records of IGSRV financial transactions
- to give a financial report at the General Meeting
- to act as a member of the Executive Committee.

ARTICLE 8. EXECUTIVE COMMITTEE

There shall be an Executive Committee which shall conduct the business of the IGSRV when and if required between General Meetings.

ARTICLE 9. COMPOSITION OF THE EXECUTIVE COMMITTEE

The Executive Committee shall comprise the officers of the IGSRV.

In addition, the Officers shall recommend members to serve as regional representatives. Regional representatives should, whenever possible, be nominated by members of that region.

The Officers may co-opt *ad hoc* members as required to serve on the Executive Committee.

The Executive Committee shall be empowered to appoint an eligible member to its number should a vacancy occur between General Meetings and the appointment shall be valid until the next General Meeting.

ARTICLE 10. REPRESENTATIVES

The General Meeting shall nominate IGSRV members to act as veterinary representatives on:

- the Standing Committee of the ICRAV
- the ICRAV Programme Committee
- the Advisory Council on Prohibited Substances of the International Federation of Horseracing Authorities (IFHA).

ARTICLE 11. MEETINGS

General Meetings shall be held with meetings of the ICRAV. Special Meetings may be convened by the Chairman whenever it is deemed desirable or necessary. The convener of such Special Meeting shall report the outcome to the next General Meeting. Members may call for an Extraordinary Meeting with the written support of seventy-five percent of the membership.

ARTICLE 12. MAIL VOTE

Whenever, in the judgement of the Executive Committee, any matter arises which should be put to a vote of the membership, and it is inexpedient to call a Special Meeting for such purpose, the Executive Committee may submit such a matter to the members in writing by mail (which includes electronic mail) vote and decision. The matter thus presented shall be resolved according to a majority of the votes received within one month of such submission to the membership, provided that in each case votes of at least a simple majority of the mailed ballots shall be returned for

counting. Any and all action taken in pursuance of a majority mail vote in each such case shall be binding upon the IGSRV in the same manner as for any action taken at a duly called meeting.

ARTICLE 13. BUSINESS REPORTS AND MINUTES

A report of the General Meeting shall be published as an addendum to the *Proceedings of the ICRAV* in accordance with the guidelines of this Conference.

Minutes of Meetings shall be circulated to membership in a timely fashion and shall be confirmed at the next General Meeting.

ARTICLE 14. AMENDMENTS

Amendments to these Guidelines shall be made only by a majority vote of eligible members at a General Meeting.

ARTICLE 15. DISSOLUTION

Upon the winding up and dissolution of the IGSRV and after paying for debts and obligations, the remaining assets of the Group shall be distributed as determined by the Executive Committee to a non-profit fund or foundation organised for scientific purposes whose aims are to promote the health and welfare of the horse, in accordance with the Aims mentioned above.

Adopted as amended at the 11th IGSRV General Meeting, 27 October 2006.