



I.C.H.S.W.J.

**International Conference
Health, Safety & Welfare of Jockeys**

Report

New Jersey, U.S.A.

2013

Day 1 - Friday, 13th September 2013

Introduction - Denis Egan (Chairman I.C.H.S.W.J.)

Denis Egan welcomed everyone to the conference and said that the conference this year was the biggest yet with 54 people from 10 countries representing 35 different organisations indicating that they would be attending. He said that 13 organisations were being represented for the first time and that the numbers attending this year's conference represented a 25% increase over last year and that this certainly justified bringing the conference back to the USA for the second year in a row,

Welcome address - **Dennis Drazin** (Monmouth Park)

In his welcome address Dennis Drazin outlined how Monmouth Park provided for jockeys welfare. He referred in particular to the fact that workers compensation is provided with no caps and that a percentage of the purse money is used to provide for jockeys and their families not covered by workers compensation. He said he was proud to help jockeys and to work to protect jockeys.

Session 1 – “The challenges of making weight” (20 mins)

Overview of implications of making weight practices - SarahJane Cullen/Kate O'Brien (DCU)

Many jockeys are living and competing in a chronic energy deficient and dehydrated state as a result of using various unhealthy making weight practices to achieve and maintain the necessary low body mass. The majority of jockeys do not have weight loss strategies with most using energy restriction and dehydration and other acute weight loss practices. In the lead up to a race the average weight loss by a jockey is between 3%-6% of body weight. Some jockeys have lost up to 10%. The symptoms of the effects of making weight were outlined.

Limited information is available as to the precise physiological and performance consequences of making weight in jockeys. Much work has been completed on making weight in wrestling and an overview of the available literature is presented. While many similarities exist with other weight category sports, the demands placed on a jockey in terms of weigh in and out time may exacerbate any deleterious effects of making weight.

Cognitive function is a particular area of interest in horse racing especially in the context of the health and safety of all jockeys on the track. In a field where many race horses may be moving in close proximity at speeds in excess of 65 km/hour, split second decisions, attention, concentration and memory efficiency can mean the difference between winning and losing as the jockey must monitor and take advantage of fleeting gaps and shifts in the field.

Information is provided from the current literature on the effects of dehydration and energy restriction on cognitive function. Evidence suggests the tasks that require attention, immediate memory, and psychomotor skills, as well as assessment of the subjective state, are the aspects of cognitive function most negatively affected by dehydration however a lack of consistency in evidence published to date as to the exact dehydration level associated with a decrement is apparent due to the various methodologies used.

Extensive research has been conducted by the military to examine the effects of weight loss and caloric restriction on cognitive performance with consistent impairments in cognitive function apparent. Limited information exists relating to individuals involved in a weight category sport. Data is presented on the effects of rapid weight reduction on cognitive function in jockeys highlighting the variability in individual results. The length and intensity of the racing season and frequency of use of weight loss practices has been suggested to have caused an attenuation of a detrimental response, through a potential habituation to a cognitive stressor.

The second part of the presentation was a 'Question & Answers' section with Kate O'Brien who is both a jockey and

a sport science graduate. Kate outlined her experiences on making weight.

She said the maximum amount of weight she had to lose was 6lbs in 4 days. She also said the weight loss definitely affected her performance and that it was pointed out to her after the race that she didn't ride as well as she can even though she thought she did.

Kate welcomed the introduction of the new minimum weights structure for apprentice jockeys in Ireland. She said that it encouraged a healthier approach to making weight.

Setting minimum weights – multi-nation perspective (1 hour)

- **Ireland – Dr. Adrian McGoldrick** (10 mins)

Dr. Adrian McGoldrick updated on the introduction of the new system for setting minimum weights for apprentices in Ireland which came into effect on 15th August.

He said the catalyst for introducing the minimum weights was the major problem that had been identified with dehydration in jockeys. The main purpose of the new system was to encourage healthier living and weight making practices.

Dr. McGoldrick outlined the results of a number of studies carried out in Ireland which were the catalyst for the system. He said that the raising of the weight structures in Ireland in 2006 led to an overall improvement in the dehydration levels in jockeys but that one of the recent studies in September 2011 showed that there was considerably more dehydration in apprentices than professional jockeys. This result is not surprising as statistics have shown that the average weight of an 18 year old is rising by 1lb every three years. He also referred to the increase in the average weight of apprentices entering the apprentice school in Ireland which has risen from 81lbs in 1978 to 108lbs currently. This represents an increase of 27lbs. However the minimum weight has only risen by 11lbs in the same period. Dr. McGoldrick said that only three of the apprentices currently licensed in Ireland can ride at the minimum weight.

The protocols for setting the minimum weights were outlined as were the procedures for jockeys to have their weight reviewed on a monthly basis if they so wish. Dr. McGoldrick said that the hydration level used was 1.020 as that was the accepted level for dehydration internationally. The procedures that are followed if an apprentice rides overweight were explained which include a referral to the dietician or the resetting of the weight if it happens on more than three occasions.

Dr. McGoldrick identified the main problems encountered which he summarised as follows:

- Is the hydration level used appropriate – his view on this is that there is no basis for using any other level
- The difficulty apprentices have in maintaining the minimum weight
- The level of “buy-in” and compliance from the apprentices. He said that he felt there was underuse of the support services such as dieticians etc. However this has improved in recent weeks.

In conclusion, he said that the system would be reviewed in full at the end of the year with the jockeys and the trainers and that the next stage of development was more emphasis on the blood sugar levels which were not integrated into the work. He suggested that the weights may need to rise internationally but there was no indication that this was going to occur. It was also noted that there was little point in putting the weights up in Ireland if it didn't occur everywhere as Irish jockeys would be at a disadvantage if they rode abroad as it could involve wasting to make weights.

In general there was good support of the concept and a number of countries indicated that they would be interested in considering doing something similar.

- **Great Britain – Dr. Michael Turner** (10 mins)

Dr. Michael Turner outlined the situation in Great Britain (GB). He said that raising the minimum weight doesn't solve the problem but it does, however, reduce the pressure on riders who are just starting out in the sport – the Apprentice jockeys. He said there is no need to raise the minimum weights if there are enough jockeys available to ride at the current minimum.

He outlined the results of a BHA initiative in 2013 to set a minimum riding weight (MRA) for apprentice and conditional riders that had ridden less than 25 times in the previous 12 months. He set out the factors that were taken into account to determine their weights and said that their minimum weight was determined by the BHA Chief Medical Adviser (BHA CMA) Dr. Michael Turner and published.

Dr. Turner referred the initiative and how it applied to all the other riders with more than 25 rides in previous 12 months. He said it involved a review of all rides in previous 12 months including all rider where overweight was carried. From that the Lowest Riding Weight (LRW) was established and published by BHA.

With regard to what is now happening he said that there is no restriction on jockeys accepting rides at any weight and that there are no penalties for carrying overweight. The maximum overweight allowed = 3 lbs. (otherwise jockey must be substituted). All rides carrying overweight monitored by BHA CMA with particular emphasis by the BHA CMA on all rides carrying overweight - at or below the LRW or MRW. If a rider is persistent riding overweight he is advised to see a nutritionist. If the problem continues, the rider must be evaluated by BHA CMA. If it is still not resolved the BHA will alter the licence of the offending jockey and set a minimum weight below which s/he cannot accept rides.

He identified his main areas of concern as follows:

- Jockeys will sometimes accept rides at weights they cannot achieve to earn a living
 - The role of jockeys agents putting jockeys on horses because the more they ride the more the agent earns
 - The impact of jockeys getting bigger on the weights they can ride at.
 - The minimum weight in GB was 50kgs until recently which he described as the average weight of a 13 year old. It was now 51kgs.
 - Weight management myths – if you take a sip of water you will put on a disproportionate amount of weight
 - Reluctance of some jockeys to follow nutritional advice
 - Use of the sauna
 - Disordered eating i.e. flipping, bulimia
- **France – Dr. Benoit Le Masson (10 mins)**

Dr. Benoit Le Masson said that the minimum riding weight in France hadn't been modified since 2002. The minimum weights are:

Flat: - 51kgs

Apprentices – 48.5kg**

Jump – 61kgs

Apprentice jump – 61kgs

** Apprentices can claim an allowance of 3.5kgs on the flat.

Dr. Le Masson set out an analysis of weights carried in French racing in 2012. He said that only 2.5% of the 55,697 rides on the flat were at 52kgs or less while over jumps only %% of the rides were less than 63kgs. He outlined the equipment that must be included with the rider when he is weighing out or in and said that the rider is allowed 1kg for the body protector and a tolerance of less than ½ kg.

All riders must be certified as medically fit to ride by a medical officer approved by France Galop each year. The confidential report accompanying each riders licence application is maintained on the system.

The process for determining a rider's minimum riding weight (MRW) was set out. It involves an analysis of all the rider's weights in the previous 12 months and a clinical examination from which the MRW is calculated and published. He said about 30 riders per annum increase their MRW and that the medical officer will not finalise a MRW with a rider if he is not in good condition when he presents himself for the medical examination. He also said that there are detailed guidelines that the medical officer follows when determining the MRW.

- **Australia – Kevin Ring (10 mins)**

Kevin Ring said that the minimum weight for the vast majority of races in Australia with the exception of the Melbourne Cup, Caulfield Cup and other Group One races is 54kgs. It was increased in 2009. The minimum weight in the Melbourne Cup and Caulfield Cup is 50kgs. He said that the raising of the minimum weight to 54kgs has made it easier for jockeys and there is a greater focus on nutrition and exercise. The regulation of sauna use was also referred to as a result of an incident some years ago where an Australian jockey successfully sued a racetrack as a result of a heart attack sustained in the sauna.

- **USA – Robert Colton (10 mins)**

Robert Colton presented an alternative view to raising the weights. At the outset he referred to the weight loss practices of 47 jockeys during an active racing day, measuring body fat, hydration levels, and weight loss methods. He said that 90% of the jockeys surveyed were using temporary unhealthy weight loss methods such as the sauna, use of laxatives etc. and almost half of the jockeys never exercised.

Reference was made to the declining foal crop in the USA which is at its lowest level since 1951 and the decline in the number of times per year that a horse starts. This has fallen from 11.3 starts per annum in 1960 to 6.1 starts in 2010. Based on current projections he estimated that the total number of starts in 2017 will be 256,000 which is down from 738,000 in 1989.

Taking into account the fall in the number of starters, the issue of why there are so many jockeys has to be questioned and why more jobs haven't been lost in the racing industry. He said the answer to this is the increase in prizemoney from slot machine revenues. As a result bottom claimers can now race for what would previously be a stakes purse. However this may not last as federal government, with huge financial strains on their resources are becoming less tolerant of the racing industry and there is a suggestion that the funding may dry up. He said that North American purses are up 2.5% in the last 10 years even though pari-mutuel revenues are down 28%. This may not last.

There was reference to the USA weights being raised by 8-10lbs over the last two decades even though the minimum weight hasn't officially risen. This is due to equipment allowances at the scales and an increase in the bottom weight that horses are entered at. Despite this he said that the inclusion of the body protector as part of a jockeys weight should be stopped as it compromises safety because jockeys will use a light body protector for the purposes of making weight which is dangerous. He also suggested that the weighing in and out procedures should be standardized from track to track as there are generous weighing procedures at some tracks and not at others.

He noted that Jockeys, as a group, are very healthy, but:

- have poor weight loss habits
- do not eat healthy
- do not work out on a regular basis

The racing industry

- does not have enough horses and has too many jockeys and
- is going through historic contraction

In conclusion he said that the solutions have to involve truthful and frank discussions as to what the real problems are, including what is really happening in jockeys' rooms and in their lifestyles. The solutions must be based upon sound medical science that will improve the health & welfare of jockeys and that nutrition and

exercise education is the obvious answer, but that the jockeys need to take ownership of this. He said that uniform weighing procedures need to be developed and implemented.

Session 2 – “New treatments for Brain and Spinal Cord Injury” (1 hour)

The Miami Project Experience – *W. Dalton Dietrich*, Ph.D. Scientific Director, The Miami Project to Cure Paralysis
Traumatic brain and spinal cord injury can produce devastating long-term consequences following mild, moderate, or severe insults. Recent work in The Miami Project has helped develop new strategies to protect and promote recovery following various central nervous system injuries. Therapeutic hypothermia (mild cooling) has gained increased application in the areas of cardiac arrest and neonatal hypoxia. On-going studies are also assessing the beneficial effects of early cooling following stroke, severe traumatic brain injury and spinal cord injury.

In traumatic brain injury, lowering brain temperature has been shown to be effective in reducing the destructive consequences of secondary injury mechanisms and improving outcomes in both animal models as well as patients. A new multicenter trial is being organized to assess the effects of early cooling combined with decompression surgery in severe TBI patients. In the area of spinal cord injury, 35 patients have been cooled in Miami following severe cervical spinal injuries with encouraging results. There appears to be limited risk factors associated with cooling these patients and at one year follow-up, there is evidence for improved motor function compared to non-cooled patients.

Other studies at the Miami Project are assessing through an FDA approved clinical trial the efficacy of human Schwann cell transplantation in sub-acute spinal cord injured subjects. The first clinical trial is a dose escalation study where three different doses of Schwann cells will be injected into the injured spinal cord. Two subjects have already been transplanted and six additional subjects will be recruited into this study. Other clinical studies in The Project are conducting conditioning and rehabilitation strategies in a new Boot Camp program targeting people living today with spinal cord injury. Motor rehabilitation combined with Schwann cell implantation in concert with early cooling may be a viable combination strategy to improve outcome in severely injured subjects. The presentation summarized some of the ongoing experimental and clinical studies and dealt with questions regarding early and chronic treatments targeting individuals with neurotrauma.

Session 3 – “Concussion”

Concussion systems – *Dr. Michael Turner* (30 mins)

Dr. Michael Turner updated on the Zurich 2012 Concussion Consensus Statement (or which he is a co-author), the current concussion systems in use in sport, the Zackery Lystedt Law, the controversy surrounding Chronic Traumatic Encephalopathy (CTE) and concussion, and the need for racing authorities to implement a rigorous concussion management system.

At the outset he outlined the timetable leading up to the finalization of the Zurich 2012 Concussion Statement and traced the history of concussion statements and the introduction of the BHA’s Concussion Management System in 2004. He set out the definition of concussion which he described as “a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces”. He said that the BHA’s concussion protocol involved baseline neuropsychological (NP) testing every year for professionals and every 5 years for amateurs. In the event that a rider is concussed there is repeat N-P testing until the baseline is reached. The N-P results are reported by a Clinical Psychologist (specialist N-P interest). Then there is consultation with a Consultant Neurologist or Neurosurgeon and a review of data by the BHA CMA.

Dr. Turner outlined the BHA concussion statistics for the period 1993-2003 and from 2004-2011. In total there were 1.8 million starts and 70,000 falls in the period resulting in 1,598 concussions. Significantly the concussion rate decreased from 1 in 39.4 falls for the first period to 1 in 51.4 falls in the period commencing 2004. The reduced concussion rate was attributable to the introduction of the new system.

Reference was made to the Zackery Lystett (ZL) law which has been introduced in many US States following a concussion received by him at the age of 13 when he suffered a concussion in a (American) Football game. He was allowed to play on and suffered an intracranial bleed which resulted in severe head injury. To date 49 States and Washington DC have ZL Laws. Mississippi is the only State outstanding.

The concussion and head injury guidelines for youth sport which were developed following the injury to ZL were set out.

He said the main messages which should be taken from a concussion management protocol were:

- Education of all those involved is essential (players, coaches, parents, jockeys, jockeys families, valets, owners, trainers, racecourse doctors, Stipes, media etc.)
- Returning to sport immediately after a concussion is unacceptable
- The decision to return to sport can only be made by a suitably qualified health care professional after an appropriate examination and evaluation of the individual

With regard to chronic traumatic encephalopathy (CTE) which is a progressive tauopathy that occurs as a consequence of repetitive mild traumatic brain injury, he said that:-

- Despite close monitoring and appropriate management of concussion there may be long term consequences for some sportsmen and women who are subject to regular head trauma
- This head trauma might seem trivial at the time of the incident
- At present, the diagnosis of CTE can only be made post-mortem

The only way of progressing research in this area is for individuals to donate their brain. He said this concept is being supported by Bob Champion and the Injured Jockeys Fund.

In conclusion he said that an effective concussion management system is essential to

- make the correct diagnosis
- monitor recovery
- assess when 'return to sport' is safe
- evaluate any long term effects of sports related concussion

Session 4 – “Insurance and Falls”

The critical insurance issues we must address – Denis Egan (30 mins)

Denis Egan outlined the results of an insurance survey that has been carried out prior to the conference. He said that there were 28 replies. For the purposes of the presentation he broke down the responses between USA/Canada, Europe and Asia. The main findings were:

USA/Canada

- In the USA the majority of tracks provide insurance free of charge.
- Jockeys do not contribute
- No requirement for USA & Canadian licensed jockeys to have insurance for riding abroad
- No requirement for foreign licensed riders to have insurance cover when riding in USA & Canada
- USA – cover provided to foreign jockeys the same as provided to locals

- Canada – most racetracks carry a foreign jockeys health insurance policy

Europe

- No country provides insurance free of charge
- The benefits available in the main racing nations are significantly better than those available in the USA
- No requirement for European licensed jockeys (except those licensed in Belgium) to have insurance for riding abroad
- No requirement for foreign licensed riders to have insurance cover when riding in Europe (except Belgium)
- The majority of European countries provide no cover to foreign riders if they are injured

Asia

- Jockeys do not make any insurance contribution in 6 countries (New Zealand, Singapore, Lebanon, Japan, Mauritius and Australia (NSW))
- Bahrain does not provide any insurance except emergency short-term cover until the rider is repatriated
- No requirement for Asian licensed jockeys (except apprentices from Singapore) to have insurance for riding abroad
- Hong Kong and Japan extend insurance to cover locally licensed riders when riding abroad
- No requirement for foreign licensed riders to have insurance cover when riding in Asia
- The majority of Asian countries provide the same cover to foreign riders if they are injured as to locals as foreign riders must be licensed locally.

Denis Egan summarized the survey findings as:

- There is a huge variation in the insurance available in each country/region
- Insurance is “free” in the USA but cover isn’t as wide as in other countries
- There is no requirement for jockeys riding abroad to provide any evidence of insurance cover in the country they are riding in
- No country requires any jockey it licenses to be insured before riding abroad
- No country checks to see if a foreign rider is insured prior to allowing him to ride
- No country requires a jockey to have any form of insurance before issuing a licence

It was agreed that a proposal should be investigated and implemented, if possible, whereby licenses issued by a licensing authority would restrict riding to the home country unless the rider provides evidence that he has a minimum level of travel insurance. Under the proposal jockeys would be issued with a card annually to confirm that insurance is in place. This card would have to be presented by jockeys when riding in the foreign country

Fall/injury prevention – *Daloni Lucas* (20 mins)

The presentation included an update on injury prevention strategies, the Injured Jockeys Fund (IJF) Performance Academy, respite and rehabilitation, raceday physiotherapy and falls training.

The main objectives of the IJF Performance Academy was described as the facilitation of holistic development of individuals, the encouragement of professionalism and improved self management, performance enhancement, the maximization of potential and injury prevention. Details of the syllabus were provided.

Details of the respite and rehabilitation programme were set out. These include injury mechanism, multi-disciplinary assessment, rehab phase and return to ride.

The jockeys injury management team provide raceday physiotherapy at 100% of jumps meetings and 50% of flat meetings. In total there is a team of 17 chartered physiotherapists who specialize in acute injury management. Details of all injuries and treatments are recorded on a computer based medical system which allows different physiotherapists access to patient records at all times.

Falls training is also provided by the IJF Performance Academy. The main purpose of the training is to increase body

awareness and confidence and to overcome psychological issues associated with falls/injuries. Film of the falls training programme was shown.

In conclusion the keys to preventing injury were summarized as:

- Proactive approach
- Multi-disciplinary/holistic
- Importance of complete rehabilitation
- Education

Oaksey House –Dr Anna-Louise McKinnon (20 mins)

Oaksey House is the Injured Jockeys Fund rehabilitation unit based in Lambourn, the heart of the Berkshire chalk downs. It was officially opened in September 2009. The initial idea was conceived by Jack Berry and was designed to be “a home for injured jockeys that keeps them in touch with Racing and like-minded people” and as something that Racing could be proud of where the young and old could meet and share experiences. It has a gym and rehabilitation facility, The Betfair Wing, which is staffed by three physiotherapists, a strength and conditioning coach and sports therapist. The Professional Jockeys Association and Injured Jockeys Fund medical advisor also works there three days a week. There are 12 living units to provide accommodation for both retired jockeys and injured current jockeys and a conference facility providing a venue for racing industry meetings, training courses and the very popular Raceday Lunches hosted by the IJF for their beneficiaries in the local community.

Over the last 12 months 25% of the new conditions seen by the physiotherapy and medical team have been in Professional Jump Jockeys, 10% in Professional Flat Jockeys and 20% Retired Jockeys. The remaining 45% have been self-paying non IJF beneficiaries.

Oaksey Houses costs approximately £700,000(including depreciation of the build and a proportion of central admin costs) a year to run and generates approximately £110,000 of income/ year. Betfair donate £50,000 a year towards the costs of the Betfair wing the remainder is funded by the Injured Jockeys Fund.

Session 5 – “Jockeys Associations”

Associations to update on issues that are of concern to them (40 mins)

Presentations were made by each of the six jockeys associations present at the meeting. The main points made were as follows:

(i) Jockeys Guild – USA

Concern was expressed on a number of issues namely:

- the safety of riders at tracks. It was noted that only 24 tracks are accredited with the NTRA
- the condition of some of the starting stalls which were described as “outdated” when compared to other countries. It was stated that the replacement cost was prohibitive. This fact was subsequently disputed when it was pointed out that the cost of Steriline starting stalls which are used throughout the world was considerably less than the replacement cost figure quoted earlier
- the lack of medical procedures and proper personnel at all racetracks throughout the United States
- the lack of standards for doctors provided as many do not have relevant experience and do not have trauma skills. He stressed the importance of paramedics over EMT’s
- the amount of illegal drugs in horses on racedays and the implications for the safety of jockeys. Many jurisdictions do not have pre-race exams.

- the lack of controls on the use of shock wave therapy
- the lack of proper benefits throughout the country for riders in the United States while riding, retired, injured or permanently disabled
- the lack of proper nutrition for jockeys on raceday with the abolition of the use of kitchens and the use of vending machines
- the lack of benefit for jockeys that are seriously injured. Reference was made to one jockey who is in hospital in New Mexico who has suffered paralysis and his on-track insurance cover has run out; with his expenses running about \$20,000 per month. No guaranteed funding from the permanently disabled fund.
- the lack of a racing authority in the United States
- the racetracks in the United States have many economic issues or owned by casinos which do not particularly care for horse racing or the issue of jockeys.

(ii) Professional Jockeys Association – Great Britain (GB)

Paul Struthers outlined the benefit structure in place in GB for injured jockeys and the back up support services available. He said that GB jockeys were suffering unnecessary stress to their mental well being as a result of disciplinary decisions taken in some countries which did not adhere to the principals of natural justice. He said he supported the concept of uniformity of insurance cover for jockeys riding abroad.

(iii) Irish Jockeys Association

Andrew Coonan outlined how the jockeys benefit system works in Ireland. He said the main advantage is that all funds are collected centrally. He outlined the importance of jockeys thinking about a future career as soon as they start riding so as they can be working towards it during their riding career. He agreed that the issue of insurance for international travel must be addressed. He referred to the international drug testing of jockeys and said that there must be a safe system similar to WADA. He also referred to the lack of uniformity in the Rules of Racing throughout the world. He concluded by referring to the great expertise in the room that was willing to help jockeys.

(iv) Australian Jockeys Association

Kevin Ring referred to the new sports medicine doctors that have been appointed in Australia. He also referred to the benefit systems in place and said that professional jockeys don't pay for insurance. He said the riding fee in Australia was in the region of \$165-\$180 per ride. He concluded by saying that research had shown that race riding was the second most dangerous occupation in the world.

(v) Association des Jockeys - France

Celine Maussang referred to the recent positive drug test on a French rider which had occurred as a result of contamination and the fall out from that. She said the ban had now been suspended pending a court case which is scheduled to take place next year.

(vi) Jockeys Benefit Association of Canada

Robert King outlined the insurance benefit jockeys receive when injured which is between \$300-\$900 per week which he described as an embarrassment. He expressed concern at the financial difficulties being experienced by racetracks. He said that prizemoney at Woodbine had fallen from \$88m to \$30m and that this was affecting jockeys as the prizemoney pool is getting smaller while the number of jockeys remains the same. He said a number of jockeys were now giving up their licences to become work riders.

With regard to concussion he said there is no concussion protocol and that 90% of jockeys suffer a concussion after falls on the polytrack.

Session 6 – “Country /Organisation Updates – Part 1” (max 10 mins each)

Australia – Dr. Gary Zimmerman (10 mins)

In his presentation Dr. Zimmerman set out:

- Facts about Australian Racing – The number of racing tracks, the number of meetings held, the number of races run, employment within the Australian Racing Industry.
- Injury Statistics and Information about Australian Jockeys – Recorded fatalities within the industry, jockey injuries, riding fees, prize money and other benefits. Workers Compensation Programs.
- The Role of the Medical Consultant for Racing Victoria – The implementation of a Medical Management Program, including medical services and welfare for jockeys. An overview of what the role encompasses on a daily basis.
- The Proposed Implementation of National Uniform Achievements – The establishment and implementation of a variety of protocols and guidelines aimed at improving the development, safety and overall success of the Australian Racing Industry.
- PRA & AJA Critical Incident Response Protocols - Procedures related to the management of critical incidents devised by the Australian Jockeys Association in conjunction with the Australian Racing Board and independent consultants.
Jockey Wellbeing Programs – Information on the history of the introduction of Jockey Assistance Programs and the ongoing work within the Racing Industry to provide additional services to further enhance the welfare of jockeys and their immediate families.

National Steeplechase Association – Peter McGivney/Greg Morris (10 mins)

The work of the NSA was outlined. An update was also provided on safety protocols that the association have in place including the use of a medical card which the jockey wears on his vest. The role of the professional safety advisor was explained. He checks that the ground and fences are safe. Reference was made to the jockeys medical programme which was set up in 2007 which includes the post evaluation of falls. The NSA also has a concussion protocol which includes the carrying out of a baseline impact test before licensing. It was noted that there are 1,600 starters each year and that there are 80 fallers. All riders have to have their own insurance.

A discussion followed about the fact that there was concussion protocols in place for jump racing but none for flat racing. It was estimated that the cost of the protocol for the NSA is \$350 which covers baseline tests for 75 jockeys. It was noted that there are 2,000 flat licensed jockeys and concern was expressed at the method of dealing with injuries on some USA tracks and the protocols that are followed in deciding whether or not an ambulance should be called.

National Thoroughbred Racing Association (NTRA) – Alex Waldrop

A brief update on the work of the NTRA relating to NTRA safety alliance was provide in the context of a number of points that had been raised previously. With regard to the 24 accredited tracks it was stated that there must be a doctor present at each track. The possibility of including concussion protocols as part of the code will be investigated.

Day 2 - Saturday, 14th September 2013

Session 1 – “Prohibited Substance”

Survey results – Denis Egan (20 mins)

Denis Egan updated on the results of a survey on prohibited substances and alcohol testing that had been carried out prior to the conference. In total 27 replies were received from all over the world.

The main findings from the surveys in relation to prohibited substances were:

- Not all countries carry out testing
- The list of prohibited substances used varies
- The reporting level for stimulants varies
- The laboratories in some countries inform the regulator if a stimulant is discovered below the reporting level
- Not all countries provide for the testing of the “B” sample
- Penalty structures vary

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- Not all countries carry out testing
- The prohibited level varies
- Penalty structures vary

Denis Egan said that the one point that was very obvious was that there was no uniformity.

- **Discussion on results and possibility of harmonization (15 mins)**

A discussion took place with regard to the differences in the prohibited lists and in the reporting levels. It was noted that it was common that there are substances that are regarded as prohibited in one country that wouldn't be regarded as prohibited in another and that in a lot of cases the lists reflect what each country feels needs to be controlled. For example anti-depressants are not on the WADA list which has been adopted by a number of countries while other countries do include them on lists. While codeine is regarded as prohibited in France but codeine positives are just reviewed in other countries. It was noted that reporting levels are usually determined by the capabilities of the laboratories which explains the variance in levels used.

Dr. Benoit Le Masson said that in France all “foreign” substances found in samples are reported as the philosophy in France is the well being of the jockey and anything found that can potentially compromise his health is investigated.

With regard to the differences in the alcohol screening limits, it was noted that the limits in countries are usually linked to the prohibited level for driving. He said in GB, a rider is suspended on the day if the reading is between 17 and 34 micrograms per 100 ml breath, while if it is over 35 micrograms the matter is referred to a disciplinary committee and the penalty is more severe.

In conclusion it was agreed that it may be difficult to harmonise prohibited lists as what is regarded as impairment in one country may not be so regarded in another.

- **Jockeys Associations join the meeting to raise any points on this topic (15 mins)**

The jockeys associations joined the meeting for this discussion. Their biggest concern was the variation in lists and penalties from country to country. It was agreed that the possibility of putting in place a central point of contact in each country for jockeys riding abroad should be investigated.

The importance of nutrition – Gillian O’Loughlin (15 mins)

Gillian O’Loughlin – Irish Turf Club Dietitian, outlined the nutrition programme undertaken by Irish apprentice jockeys, as part of the minimum weight setting pilot study. In it she set out the obstacles faced by jockeys making weight and the rationale behind the nutritional advice given to help them reach a safe minimum riding weight. She highlighted how best to manage their diets in less than optimum situations e.g. eating from take-aways and petrol stations when travelling to and from the races and the best food to eat before, during and after racing.

Two case studies highlighted the changes which can be achieved by tailoring the diet to the individual jockey. The limitations involved in the process and suggested improvements were discussed. The main limitations were that the season had already started when the weight setting process commenced. As a result it was hard to arrange appointments and many found it difficult to get into a routine mid -season. The third complication was the lack of motivation for some apprentices as they were not getting rides.

She concluded by summarising the main things that had been learned from the process which were:

- The guide booklet – too cumbersome – it was suggested that an App would be better
- Hydration strategies should be encouraged.
- Recipe ideas – cookery classes.
- Appropriate, standardised provision of food at the race- courses.
- Have suitable drinks available to jockeys at the race tracks.
- Educate Trainers regarding dietary needs.

Physiological profile of Hong Kong Jockeys – John O’Reilly (30 mins)

Background:

The main challenges for Jockeys include making weight on a regular basis with limited time for the body to recover in-between race meetings. It is commonly known among sports science practitioners that unnatural weight loss practices can have a harmful effect on the body over time. To date, little or no information is available in relation to the physiological profile of professional Hong Kong jockeys. Furthermore, there is limited data in relation to the heart rate response of professional jockeys throughout a race day.

Aim of the study:

To assess various health & fitness measures and investigate the work intensity during race day of professional Hong Kong jockeys. In addition, the dietary intake of these jockeys was assessed over a 3-day period during the racing season.

Discussion & Conclusions:

Aerobic fitness, as measured by VO_{2max} , of Hong Kong jockeys was significantly higher than that previously found in their UK and Irish counterparts. The jockeys had a markedly lower bone mineral density than would be expected for their age (Palmer et al, MSSE, 2003,35,20), leaving them at a greater susceptibility to fracture from an impact that might otherwise leave them unharmed (Brown and Josse, Can Med Assoc J, 2002, 167,1). The jockeys were considerably dehydrated in an attempt to make weight for racing. Heart rate data indicated that the jockeys performed regular bouts of high-intensity exercise during the race day. A review of dietary, physical activity and hydration practices is recommended for this athletic group.

Jockey Apps for iphones – (My Fitness Pal, Map My Run) – SarahJane Cullen, Robert Colton (15 mins)

In all racing nations, large amounts of time and effort are put into providing best practice guidelines and advice for jockeys. Very often such information is in the form of booklets, leaflets and on various sites on the internet and it

may not be reaching the jockeys in the most efficient way. Nowadays, mobile phones are used by everyone and a large majority of people spend endless time using various apps. Jockeys are no different. It has been suggested the development of an iPhone App for Jockeys may be an ideal way to deliver essential information to jockeys. The idea of an App for jockeys would be that all information may be stored in the one place and be easily accessible to all jockeys around the world. This presentation provides an overview of the possible parameters that may be included in the iPhone app. We are currently compiling all necessary information on the various areas including nutrition, fitness and exercise, International travel, mental health and preparation. Examples of currently available apps we can draw ideas from or potentially link in with are provided. Ideally International involvement as to the information included and also funding opportunities would be preferred so we are welcoming all advice and suggestions to ensure the success of developing an app that will provide all jockeys with easily-accessible, essential and valuable information.

Session 3 – “Jockeys Pathway”

Update on Irish work – *Sarajane Cullen* (15 mins)

Based on previous research revealing some worrying trends amongst jockeys, many strategies have been put in place in Ireland in recent years to encourage the adoption of healthier weight making practices amongst jockeys. Such strategies have included raising the stipulated competition weight standards, the availability of a dietician to all jockeys, providing an educational program for apprentice jockeys and most recently the implementation of a new minimum weights structure for apprentice jockeys. Until recently, the physiological demands and energy requirements of the racing, training and daily activities typically undertaken by jockeys have remained relatively unknown causing difficulties when providing sport-specific nutritional and training advice. This presentation offers an update of the research conducted in Ireland providing a greater insight into the physiological demands and energy requirements of racing, training and other daily activities in a group of flat jockeys. Results from this study provide a scientific evidence base with essential information to allow the development of sport-specific nutritional and training recommendations to optimally equip and prepare jockeys for a career in horse racing and beyond.

Work of North American Racing Academy (NARA) – *Chris McCarron* (20 mins)

Chris McCarron set out the background to the setting up of NARA which opened in 2006. He said that prior to the school being set up there was no place where aspiring jockeys in the USA could be formally trained in an academic environment.

NARA is the first professional horse racing school in the United States and includes a very important component; the “horseman’s pathway”, which prepares individuals who desire to work around thoroughbreds in the capacity of grooming, starting yearlings, sales preparation and equine management.

It teaches students the fundamentals of professional race riding and horse care with courses in nutrition, fitness, finance, communication, rules of racing, and technology. Located at the Thoroughbred Training Center and The Kentucky Horse Park in Lexington, NARA has partnered with Bluegrass Community & Technical College to offer an associate degree and certificate programs in Equine Studies.

The mission of the NARA is to develop and operate a world-class racing school that will provide students with the education, training and experience needed to become skilled in the art of race riding, proficient in the care and management of racehorses, and knowledgeable about the workings of the racing industry as a whole.

NARA’s vision is to create a foundation of education and training geared toward the principles of horsemanship, sportsmanship, competition and integrity. To develop life skills and provide students with a basis of knowledge in areas such as general education, substance abuse, nutrition, fitness, personal finance and technology. To create a network linking NARA and its curriculum to horsemen in need of more qualified employees and to other racing

industry educational outlets.

There are two professional qualifications available through the academy. On the completion of 68 credit hours you attain an associate degree in Applied Equine Science while 36 credit hours attains an exercise rider's cert or a horseman's cert. The cost of tuition varies from \$500 per credit hour for non-residents of Kentucky to \$150 per hour for Kentucky residents. Most students come from outside Kentucky. Most students finance their courses through student bank loans.

To date 89 students have enrolled on the programme with 53 graduating. 56 have been licensed as jockeys, exercise riders and grooms with 21 becoming fully fledged jockeys. Chris McCarron did say that they needed to come up with a better way to recruit students.

The make-up of the various parts of course were outlined. Chris McCarron said there were three critical elements that anyone who wants to become a jockey must overcome to be successful and that these cannot be disguised namely fear, lack of experience and lack of fitness.

Ageing Jockeys Health Issues – Dr. Adrian McGoldrick & SarahJane Cullen (20 mins)

. The weight restricted nature of horse racing necessitates many jockeys to consistently maintain an extremely low body mass in order to increase riding opportunities. The constant reliance on unhealthy weight making strategies amongst jockeys are widely documented inevitably leaving a large proportion of jockeys in a chronic energy deficient and dehydrated state. Results from previous studies reveal a high incidence of low BMD and increased bone turnover are prevalent amongst jockeys in addition to an altered hormonal profile associated with bone loss. Such findings suggest the restricted achievement of individual genetic potential for peak bone mass potentially producing deleterious musculoskeletal effects in later life since increasing bone mass and strength during growth is known as the primary strategy for the prevention of osteoporosis.

Back problems, arthritis, other joint problems and dental problems have previously been reported as the most common health issues experienced amongst retired jockeys. Excessive weight was also experienced amongst a small proportion after retiring from racing. Such findings were all attained via surveys and questionnaires. The long term health consequences of a career in a weight restrictive lifestyle remain relatively unknown however the status of bone health amongst the current jockeys would suggest some worrying trends. Moreover, large fluctuations in body mass early in life, be it during growth or young adulthood, have been suggested to represent a risk factor for the development of obesity, type 2 diabetes and cardiovascular disease in later years.

Ideally, longitudinal analyses are required to assess the long-term health effects of the typical lifestyle demands of a jockey. In the interim however, with information on the health status of current jockeys in mind, a full health screening was recently conducted on a group of retired jockeys. Initial analyses have been completed with 63% of the retired jockeys classified as overweight (BMI >25 kg/m²), 68% displaying raised cholesterol levels, 16% and 41% showing elevated levels of PSA and SHBG respectively, 62% having osteopaenia in one or more of the whole body, lumbar spine or proximal femur scans and 84% showing inadequate Vitamin D levels. Further analyses will be completed to establish if any of the health parameters may be associated with the lifestyle demands of a jockey

An Ecological Perspective on Ageing in the Horseracing Industry – Challenges in the U.S. Workforce –

Dr. Karin Opacich (30 mins)

At the outset, the objectives of the presentation were summarized as:

- Review the determinants of health.

- Recognize the cumulative effects of conditions and events on health and quality of life for aging individuals.
- Explore how an ecological analysis can enhance our understanding of challenges in aging for the workforce in the racing industry including but not limited to jockeys.
- Consider how prevention, resources, and support can contribute to both the health of industry participants and a robust industry.

It was noted that the proportion of persons aged 60 or over was estimated to increase from 10% in 1998 to 15% in 2025 and that people in general terms are living longer.

The main determinants of health were set out as lifestyle and behavior 50%, environment 20%, biology 20% and health care 10%.

The main participants in racing were described as those involved primarily on the horse (jockeys, exercise riders etc.) – 10%, primarily on the ground (trainers, box drivers, grooms etc.) – 31%, primarily managerial economic (owners etc.) – 52%, others – 7%.

The main ways of improving the quality of aging in horse racing were described as the 5 “E’s” namely Engineering (safety equipment), Education, Enactment (legislation, regulation), Environment (built, social, the impact of isolation) and Enabling/empowering(be engaged and give back to the industry in some way).

There were a number of issues identified which makes aging more challenging in the US Racing industry and which must be addressed. These were described as

- Business structure of the racing industry. There are a lot of independent contractors, each segment is self-governing.
- Lack of national racing authority and oversight. No one body can impose rules.
- Absence of universal health care
- Large proportion of under documented or undocumented workers. This leads to a difficulty in providing resources.
- Combined exposures and risks of agriculture, livestock, and in many cases migrant/seasonal workers
- Access to preventative health care. Some racetracks don’t provide adequate medical resources.
- Health literacy across the industry
- Some aspects of the industry culture

Session 4 – “Synthetic Tracks”

Review and data on injuries and falls on synthetic tracks v turf tracks in Australia – Kevin Ring (25 mins)

Jockeys, both in Australia and overseas, have expressed concerns that, when a fall occurred on synthetic track surfaces, the outcome for the rider was likely to be worse than when falling on a traditional turf surface.

The objective of this report is to consider the incidence of falls and resulting injuries (especially serious injuries) occurring at synthetic track race meetings in Australia. The concern regarding the potential health risks from carcinogenic and toxic materials that may be contained in some tracks was also investigated.

Background

Synthetic tracks are relatively new to Australian racing; the oldest surface is the Canberra Acton Track (9 years old), followed by Sunshine Coast Cushion (5 years old), Toowoomba Cushion (4 years old, about to close), Geelong Pro-Ride (open for 1 year then closed for 2 years and re-opened, now 3 years old) and Devonport Tapeta (2 years old).

Methodology

The study into the concerns of jockeys falling on synthetic tracks was conducted over a six (6) month period from 21st November, 2012 to 21st May, 2013. It considered synthetic track race meetings from 2006 to 2012 inclusive. There were a number of unforeseen difficulties in undertaking this study. Most Principal Racing Authorities [PRA] did not have the entire information that was required; the exceptions were the Canberra Racing Club and Tasracing, both of which had all the required information documented.

Recommendations

1. The Australian Racing Industry should continue to gather data for further analysis and review relating to the incidence of falls and injuries on the synthetic surfaces.
2. The Australian Racing Industry should acquire information on the falls and injuries rates from International jurisdictions for a comparison with Australian rates.
3. The Australian Racing Industry should improve recording and reporting of race day and track work injuries in the ARID and RVL's "SHE" system's databases.
4. The Australian Racing Industry should ensure, as an absolute priority that all track managers and their staff are fully trained in the maintenance and preparation of synthetic surfaces.

Conclusion

Although data relating to this issue is limited in its quantity, it can be concluded that there is insufficient evidence to support that a rider falling on a synthetic surface (that has been maintained and prepared in accordance with the manufactures guidelines) will result in a worse outcome than a similar incident that occurs on a turf surface. This report should contribute in alleviating riders' concerns; however the outcome of future incidents should continue to be closely monitored.

The Australian Racing Board has endorsed this report.

The British experience – *Dr. Michael Turner* (20 mins)

Dr. Michael Turner presented the data from all-weather racing in GB which started at Wolverhampton in 1933. The current AWT materials were developed in the 1980's and there are now 4 AWT racecourses operating in GB utilising two different materials (Fibresand and Polytrack). The fall and injury data was compared with racing on turf for the period 1994-2012.

The statistics showed that for turf racing there were 717,000 rides in the period and 3,600 falls which represented a fall rate of 1 in every 197 rides. The comparative figures for AWT were 255,000 rides with just over 1,000 falls. This represented a fall rate of 1 in every 246 rides. In Turf racing there was an injury every 603 rides and a serious injury in every 3,102 rides while in AWT racing there was an injury every 882 rides and a significant injury every 3923 rides.

The GB data showed that for AWT there were:

- Less falls (per ride)
- Less injuries (per fall)
- More clavicle fractures (as a % of injuries)
- Same rate of concussion (per 100 falls) but fewer falls overall so less concussions!

The statistics do not show that there are more injuries on AWT than on Turf or that the injuries are more serious. This conclusion is in line with the conclusion from the Australian study.

Session 5 – “Safety Equipment”

Helmets – the European Standard – Dr. Adrian McGoldrick (10 mins)

Dr. Adrian McGoldrick updated on the European personal protective equipment directive and the history of the British helmet standards from their introduction in 1963 to the development of the European Standard –EN1384- in 1969. He outlined the developments from 1996 to 2011. He said that following a mandate from the European Commission, CEN decided not to revise the standard EN1384 but to develop a new European Standard EN14572 – HIGH PERFORMANCE HELMET FOR EQUESTRIAN ACTIVITIES. However by 2008, no helmet that matched the standard had been put on the market. The European Commission then asked that the old standard EN1384 be revised and in June 2011 EN14572 was withdrawn from the market. Work is ongoing on the revision of the standard.

Australian helmets demonstration – Brendan Denning (10 mins)

Brendan Denning outlined the background to the development of the new Coonan and Denlay helmet. The helmet is the highest standard helmet currently available on the market and is expected to soon meet the standard set by the Australian Racing Board. At presently the helmet is meeting the drop test which is set at 2.5m but not consistently and as such requires some further adjustments prior to being approved. No other helmet currently on the market meets a drop test greater than 1.8m.

Safety vests, goggles and gum shields – Various (10 mins)

A number of safety vests, goggles and gum shields were displayed. A number of problems with specific types of safety vests and goggles were pointed out which could lead to injury in the event of a fall. It was noted that there was no standard set for goggles and that polycarbonate is the recommended type of material that should be used in goggles used by flat jockeys. This type of material is not suitable for jump jockeys as it doesn't allow goggles to be stacked during wet weather.

With regard to gum shields, while there was no scientific evidence to prove that they reduced concussions, a significant number of jockeys believed that they did.

Session 6 – “Country/Organisation Updates – Part 2” (max 10 mins each)

• **Great Britain – Dr. Michael Turner**

Dr. Michael Turner updated on some current developments in GB not already addressed as part of his previous presentations.

He referred to DEXA scanning that was carried out on 74 jockeys of which 35 (47%) showed abnormal results. He updated on a GENEACTIV research project that was carried out on a number of jockeys where they wore a wrist watch type implement which recorded all their activity and movements for a week.

He also said that the Concussion protocol has been revised and that a new standard for Air Vests – SATRA Document M39 was published (2 September 2013). He referred to the revaluation of the dope testing programme and the concussion statistics for the past 20 years which were out of 1,904,400 rides there were 1,635 concussions .

• **Germany – Dr. Peter Wind**

Dr. Peter Wind updated on an incident which took place at Hamburg racecourse. He said that the incident highlighted the importance of having a stop race procedure which was not in place in Germany but which would now be introduced.

• **Ireland – Dr. Adrian McGoldrick**

Most of the update from Ireland had already been covered under the various headings. Dr. McGoldrick again briefly referred to the minimum weights for apprentices and the ongoing research.

- **OSAF – Dr. Rita Rocca**

OSAF - is an organization formed by Racetracks, Jockey Clubs, Stud Books, Breeders Associations and Owners Associations of all South America. The objectives are to link, join, take care of the safety and the integrity of jockeys and horses, and also to represent the turf industry within the most important international forums in order to promote and strengthen our position as a region.

The information for this presentation was compiled following the answers of a questionnaire forwarded to 11 Racetracks in different countries (Argentina, Peru, Mexico, Chile, Uruguay, Brazil, Panama and Venezuela). The specific questions asked related to the conference agenda.

The first question was: does your country perform any kind of drug test on jockeys? 90 % of the countries have an alcohol test in place before racing but only 27% carry out drug testing. The second question was answered positively by all the countries, when asked if the jockeys have any insurance against sickness or accident. For the next question about control for minimum weight, 18% of the countries have some kind of control on the minimum weights , the others let the jockey make their own decisions. The fourth question related to the existence of a protocol for dealing with jockey falls , every country confirmed that they have a protocol in place. The next question related to the recording of data on jockey falls and 63% of the group answered that they do record the data. For the next question we wanted to know what kind of training do the apprentices receive to become a jockey and if they train with a specific school for jockeys. The majority (81%) have a training school for that purpose. The last question related to the jockeys retirement and whether or not any programme existed to assist jockeys. All of the 11 racetracks answered that they do not have an exit policy for jockey's retirement.

Our future work will be focused on the necessary action to be taken in order to improve the weaknesses identified, and progress and standardize the strengths detected by the questionnaires.

- **Hong Kong – Steve Ralton (10 mins)**

An update was provided in relation to statistics pertaining to race falls and associated injuries incurred by jockeys during the 2012/2013 Hong Kong racing season. The provided information complements those statistics which were provided for the 2010/2011 and 2011/2012 seasons at the last conference at Monmouth Park.

Particular scrutiny was applied to a racing incident that led to 5 jockeys falling in a race at the Happy Valley meeting on 19 June 2013. The presentation primarily focused on the medical response that occurred immediately following the fall and the subsequent measures that have been taken by the Hong Kong Jockey Club following the completion of a comprehensive review.

- **France – Dr. Benoit Le Masson**

Dr. Benoit Le Masson updated on a project that has commenced on the evaluation and improvements of jockeys helmets based on advanced head injury criteria. It was noted that as France already has two representatives on Working Group (WG) 11 which has been charged by the EU to come up with an amended standard for helmet design, it is important that the French research team liaise closely with their WG 11 representatives to ensure that there is no duplication of work.

In relation to other matters he said that the prohibited level for alcohol will be reduced to 5 micrograms per 100 millilitres in breath from 1st January 2014. He also said that if a jockeys fails to be sampled for a drugs test he will not be allowed to ride for 6 days and after that he must undergo a medical examination and be sampled

prior to being allowed to ride. In conclusion he said that the minimum standing down period for concussion will now be 5 days.

- **Jockeys Guild – Jeff Johnston**

Jeff Johnston's update covered a number of issues namely:-

- Health – more States have adopted the new weight rules (minimum weight – 116lbs) and clarified what is included when weighing out and in. A weighing allowance of up to 3lbs is allowed for inclement weather to allow for clothing and equipment
- Nutrition – more tracks are closing kitchens and installing vending machines. More education is needed as is greater participation from the jockeys who should embrace the education when it is provided.
- Safety – the model rule on shock wave therapy should be adopted by all States. The Guild fully supports the new Jockey Club rules on raceday medication. All helmets should be tested on natural surfaces, Dirt and synthetic surfaces. Three companies are working on prototypes for new safety vests. Work is progressing on the development of a new safety rein with a safety cord inside. There is no quality control on reins
- Welfare – The jockeys health information system is being continuously updated with more information and more tracks should be encouraged to use it. The updating of the jockeys injury database is also progressing. Jeff gave an example of the data it can provide in relation to falls, the cause of the falls and the result of the falls. He said that further information may need to be collected to determine whether or not there is any correlation between specific equipment and specific injuries.