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You Heard it First at SMA

By Gary Moorhead

When people make mistakes – and particularly where similar mistakes have been made in the past - they are often criticised by referral to George Santayana's aphorism *"those who cannot remember the past, are condemned to repeat it"*. (1) Santayana went on to say: *"May we find the wisdom to stop repeating the mistakes of history"*.

A determination to learn from the past underpins many research projects, particularly longitudinal studies. Longitudinal studies usually follow one or more very large cohorts of subjects over long periods of time with continuous or repeated monitoring of the subjects to help understand the matters under investigation. It could be said that by researching using longitudinal studies, we are ensuring that we are *"remembering the past"* and not repeating the *"mistakes of history"*.

But what if the lessons of the past happen to be irrelevant – or misleading?

L. P. Hartley's famous 1950's novel 'The Go-Between' begins with: *"The past is a foreign country; they do things differently there."* (2) What if this were literally true? In other words, the past was sufficiently different from the present that we could not apply past evidence to learn how to deal with present situations.

This radical assertion was made by Professor Wendy Brown in delivering the Refshauge Lecture at the 2008 Sports Medicine Australia national conference. (3)

Longitudinal studies are usually considered gold-plated in population health research and their outcomes are often the basis for guidelines and recommendations. In the area of physical activity, the guidelines promoted by various governments around the world are largely based on the longitudinal studies of London bus drivers and conductors (Morris) (4) and US waterside workers – longshoremen - and Harvard University alumni (Paffenbarger) (5). These studies, and others, gathered data during the 1960s and 1970s, with many continuing into the 1980s and beyond. The data were summarised in the 1996 US Surgeon General's Report on Physical Activity and Health, and led to the development of national physical activity guidelines in mnay countries, including Australia, which now encourages people to *"put together at least 30 minutes of moderate-intensity physical activity on most, preferably all, days."* (6)

In her presentation at the 2008 SMA conference, Brown raised the possibility that basing *today's* guidelines on data collected in the '60s and '70s may be problematic, because, in terms of physical activity, the past really is a *"foreign country."* With significant technological change in transport, communication, work and leisure, the amount of "incidental" physical activity in normal daily living has decreased markedly since the 60s. Everyone is familiar with examples of the loss of physical activity in our increasingly car and screen-dependent lives. When did you or your children last walk to work or a social event, or to a post-box to post a letter? If physical activity guidelines recommend levels of PA (for health benefit) *over and above* the 'background' or 'incidental' activity of everyday life, what happens if these background levels decrease markedly? Are we really suggesting that there will be health benefits from 30 minute of moderate activity each day if the other 23.5 hours are spent sitting or lying down?

Further, it is possible that by focusing on structured activity to the exclusion of the importance of incidental activity, we are in danger of getting a seriously distorted picture of overall activity levels.

Brown illustrated this point by reference to a study published in 2002 (7) which showed that daily energy expenditure of an office worker who 'met the guidelines' through, for example, playing squash, were not very different from those of a housewife/mother who was 'on her feet all day" yet did not meet the guidelines, because her day was filled with constant, but lower intensity activity. The conclusion was that we need more information on whether being active all day at a low level has the same health benefits as 'meeting guidelines' by doing 30 minutes of moderate physical activity and sitting for the rest of the day. (8)

Brown's proposition received support in an article published in the October 2008 edition of the American College of Sports Medicine's journal Exercise and Sports Science Reviews. This paper (9) focused mainly on the impact of sedentary, as opposed to active behaviour; however, it included data which showed that, in a person whose activity never rose above "light", daily energy expenditure substantially exceeded that of another person who had engaged in an hour of structured exercise during the day. The American paper supported Brown's 2002 paper in also raising the *"importance of considering the full range of energy expenditure rates observed in the activity range below moderate intensity."*

The study of the impact on health of sedentary behaviour (or sitting time) is becoming a a major concern of public health researchers, with some of the most cutting edge work being undertaken in Australia. The most recent edition of the British Journal of Sports Medicine devotes an entire issue to physical activity issues and the impact of sedentary behaviour is one of its major themes. The editorial is written by Professor Steve Blair, keynote speaker at the 2007 SMA national conference. Blair writes in the latest BJSM *"I believe*

that evidence supports the conclusion that physical inactivity is one of the most important public health problems of the 21st century, and may even be the most important." (10)

Obviously, the major concern for governments and policy makers in all of this is what to do about *"the most important public health problem of the 21st century"*?

In the autumn 2008 edition of Sport Health (11) I wrote about how one of the first policy responses to the problem – the developing and promoting of physical activity guidelines - had been running into difficulty. The problem is that, as research in the field advances, guidelines require review to clarify issues relating to the dose (intensity, frequency, duration, type) of activity for health benefit. Because physical activity is such a complex behaviour, one of the greatest challenges is framing a simple guideline that covers activity for health benefit AND activity for weight loss. (Hint: "simple" simply doesn't fit!). However, thanks to Professor Brown's contribution at the 2008 SMA conference, researchers and policy makers now know to look more critically at the evidence from longitudinal studies in a 'previous age'.

Anyone with an interest in this topic would be well advised to register for the 2009 SMA national conference (*"Be Active '09"*, Brisbane, 14-17 October) where the world's leading researchers in the area will be presenting their latest research outcomes on some of the issues raised here. (See www.beactive09.com for more information.)

Tim the Mythbuster

In 2006, the Refshauge Lecture was delivered by Professor Tim Olds at the SMA national conference held in Fiji. The paper, titled "Obesity Wars" worked through some of the more murky issues in the research and publicity about obesity and took to task many popular (mis)conceptions, particularly in regard to physical activity and obesity in children.

A key point of Old's paper was that "fatness and physical activity track relatively poorly from childhood to adulthood…" (12) Perhaps another way of saying this is that you can't immunise a person against obesity by focusing solely on what they do as a child. Regrettably, a focus on children to the exclusion of other age groups has been the thrust of most government policy targeting obesity in the last decade. Based on the work of SMA members such as Olds, Brown and many others, Sports Medicine Australia has repeatedly made this point in various submissions to the Australian Government in recent years. Our most recent submission on this topic to the Preventative Health Taskforce said:

"the strategy must target all Australians as clearly all are at some risk; however, extra efforts will be needed where risk is highest. SMA has been critical of previous government policy which has concentrated on children (obesity rate of 6%) while making less effort with other population groups where risk is much higher (e.g. men aged 45-54 where obesity rates are 25%). It is impossible to obesity-proof a population by an exclusive focus on children. Commendably, the Report does not fall into this trap. Weight gain is incremental through most people's lives, with spikes at certain times such as child birth and marriage for women." (13)

Subsequently, Professor Olds has completed a major research project for the Australian Government on obesity in children. One of the more shocking (for some) conclusions from this and other research conducted by Professor Olds is that obesity rates in children have in fact plateaued – we are not looking at an epidemic of obese children in the near future. This may seem a rather breath-taking – even bold - assertion given the volume of reported "evidence" to the contrary. (Try googling "obesity, children, Australia" and you will get a flood of articles all promoting the imminent obesity epidemic in children.) Professor Olds says:

"While this may be a temporary lull, and clearly a problem still exists, the evidence suggests that we won't be faced with skyrocketing rates of childhood obesity in the near future." (14)

Hopefully, the work of Professors Brown and Olds and other SMA members will bring some balance to the debate and to policy-making. While the causes may be complex and the possible solutions may be varied and multi-faceted, there is no doubt that obesity rates and the health problems stemming from these rates are climbing at an alarming rate. The worst outcome would be to tempt politicians with a "quick-fix, magic bullet" that

squandered public resources and created skepticism in the public mind about recommendations and guidelines.

Nutrition v. "Nutritionism"

SMA physical activity researchers have often complained about the imbalance in representation afforded physical activity, on government consultative bodies looking at obesity and other health issues, compared to the numbers of nutritionists.

Radio National recently replayed an interview with Michael Pollan, a Professor of Journalism at Berkeley. Pollan was promoting a book he has written on nutrition called "In Defence of Food". The interview would give some wry amusement to these physical activity researchers and the book probably should be compulsory reading for all SDA members – if only to refute his suggestion that the science of nutrition is "where surgery was in about the year 1650 – interesting, but you wouldn't want to get on the table!" (15)

In the book (and repeated in the interview which can be accessed via podcast under "Information" at www.sma.org.au) Pollan suggests:

- Nutrition has been hijacked away from "food" to an obsession with "ingredients" and that these are then reproduced as supplements which lack the positive benefit the ingredients had when they were part of a foodstuff.

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There's stats and then there's educated guesswork

By Dr J

How much of sports medicine is art and how much is science? There are certainly lots of grey areas in sports medicine where there might be two opinions of which neither is unequivocally correct. But we all need to remember that medicine is a science and this is what separates it from witch-doctoring or faith-healing. As such, good sports medicine clinicians should also be scientists and have a keen interest in science.

The most interesting science I've read and observed of recently qualifies in my mind as a paradigm shift. It regards batsmen in cricket and what should be natural stance for a right-handed or left-handed batsman. Traditional coaching of course dictates that a right-handed batsman should adopt a stance on the side as if addressing a golf ball with a right handed club or hitting a forehand shot in tennis. An increasing number of international cricketers seem to be either natural right handers who bat left handed or vice versa. This list is no longer a short one. Of contracted Australian batsmen, Matt Hayden, Mike Hussey and Shaun Marsh are right-handers who bat left-handed whereas Michael Clarke and Adam Voges are left-handers who bat right-handed. Ricky Ponting, the captain, is a natural right-hander and one of seven contracted Australian batsmen who bat in the traditional fashion. So roughly 40% of contracted Australian batsmen currently bat in an unorthodox fashion whereas 60% are 'orthodox'. This actually isn't a freak statistic but is indicative of a modern trend. Australia's next two big things with the bat, Phil Hughes and Dave Warner, are both right handers who bat left handed. In the West Australian squad over 50% of the batsmen take stance in an unorthodox fashion. Visiting South Africans batsmen this summer included Graeme Smith, Jean-Paul Duminy and Ashwell Prince who are all right-handers batting left-handers. Two Australian all-rounders, Shane Watson and Andrew McDonald, are ambidextrous and write left-handed but bat and bowl right-handed. Our recently retired great wicketkeeper-batsman, Adam Gilchrist, was another right-hander who batted left-handed. He found he batted so much better with his top hand (the right) controlling the bat that he famously gripped a squash ball in his bottom hand (the left) to try to reduce its influence on his swing.

An interesting trend, but as scientists we need to ask whether it is statistically significant. I don't have the necessary data on hand to tell you exactly but a ball-park estimate can work out that it almost certainly is. I would like to toss up that there are, say, 100,000 batsmen in Australia and that at least 80,000 of them (80%) bat with an orthodox stance. If these figures are accurate, then a batsman is 2-3 times more likely to win an Australian contract if he bats in an unorthodox fashion. I think the 80% figure is a conservative estimate and that perhaps up to 95% of batsmen in the community would bat the same way that they hit a tennis forehand. This would mean that those who bat as if they were hitting a double-handed tennis backhand are 10 or more times more likely to make it to the elite level.

Hopefully you are following why I believe that this represents a scientific/coaching paradigm shift. If you are 3 times or more likely to be successful doing something in an unorthodox fashion, then the only conclusion that a scientist can draw is that the orthodox fashion is wrong. Our fathers and schoolmasters who are teaching six year olds how to bat should be telling their kids to invert what the traditional coaching manual is telling them. Or at the very least telling the kids to try batting both ways and consider the unorthodox stance if it feels good. Mike Hussey apparently decided to bat left-handed because he wanted to look like his hero, the Australian captain Allan Border. Michael Clarke was taught to bat right-handed by his Dad who was a natural right-hander. Fortunately these two went with these impulses rather than the coaching textbooks.

This observation is probably the cricketing equivalent of a *Moneyball* approach, as per the baseball story of the Oakland Athletics. *Moneyball* is the story of Billy Beane, who is a baseball executive who chooses his players based much more on statistical observations than traditional coaching ones. The most famous of these is that statistically it is more advantageous to get to first base on a walk than on a hit, which is the opposite of traditional thinking. The traditionalists view a walk as a pitching error, rather than a skill of batters. *Moneyball* analysis shows that teams that manage to draw a lot of walks win a lot of matches, because they strike out less often and because the walks tire out the arm of the opposition starting pitcher. I am now fascinated to find out whether the Moneyball analysts in baseball have worked out whether unorthodox batting in baseball is as much of an advantage as it is in cricket.

I first read about the cricket batting paradox in an article written by Peter Roebuck in the Sydney Morning Herald in November 2000. He was reviewing a book called *The Best of the Best* by Charles Davis, who is apparently a Melbourne academic. I couldn't find this book on Amazon.com and I tried to order it from a different bookselling website which managed to charge my credit card and not send me the book, so I've never read it! However the statistical observations Roebuck discussed in this article bore a great resemblance to the ones that I would read about a couple of years later in books like *Moneyball*, *The Wages of Wins* and *The Blind Side*. Davis, with statistical analysis, also asserted that night watchmen were a waste of

time and that teams were more likely to lose if they enforced the follow-on. In cricket injury surveillance we worked out a couple of years later that bowlers in teams who enforced the follow-on were much more likely to get injured. Even though this is an important factor to consider, it is probably the memory of VVS Laxman pulling a Test out of the fire that has stopped the Australian captain from ever enforcing the follow-on in recent years.

This December just gone, Peter Roebuck wrote a follow-up article on batting with the wrong hand. It was again an excellent article with the only criticism being that it didn't acknowledge Charles Davis' book as his first article did. In the first article, there was statistical back-up from the Davis book. Left-handers in Test cricket have averaged 33 over the years compared to the 28 averaged by right-handers. Apparently much of this difference is due to natural right-handers who bat left-handed, who have a much better collective batting average than orthodox batsmen. Roebuck's latest article further raised my eyebrows when he mentioned that the two biggest names in batting of the last decade, Brian Lara and Sachin Tendulkar, both write left-handed and bat right-handed. Tendulkar and Lara sound as if they are both ambidextrous, like Watson and McDonald, which is probably also more common in elite athletes. Dave Warner is starting to use a double sided bat for Twenty/20 games so that he can swing the bat both ways and perhaps this may set a trend for the future. Roebuck concedes that the best batsman of all-time, Don Bradman, was a natural right-hander who batted right-handed. Perhaps though we will soon need to see it as a concept of the twentieth century that batsmen should generally bat in the orthodox fashion.

The next paradigm shift in cricket might also have a baseball origin. We've already shown in various cricket papers over the last few years that there are correlations between high pace bowling workloads and injury. Because injury risk is still only a secondary consideration for selectors, we haven't yet seen bowlers get rotated out of the Australian Test team. However, in baseball there is statistical data that shows that if pitchers send down too many pitches, not only does their injury risk increase, but their performance also drops. This is the sort of statistical analysis that needs to be carried out in cricket as well. It would be very interesting to find that, say, if a pace bowler sends down 50 overs in a Test that his performance would drop a certain percentage in the next few weeks after that. If there is statistical back-up for this observation, does it mean that for back-to-back Tests a team should rotate its fast bowlers a la baseball? If Billy Beane was in charge of a cricket team, he would order his statistical consultants to answer this question and, if necessary, he'd be prepared to throw tradition in the trash can.

A final challenge for those of us working in the field is to try to find a way to objectively demonstrate the true value of good sports medicine to team success. Intuitively there are times when the medical team declares a player fit to play who was in serious doubt, who then goes on to win the match with an outstanding performance, that we can feel as if we have made a major contribution to team success. In general we may feel important in our own minds, but we are perhaps yet to win over the average sports administrator. One of the beauties of sport is that the value of the best athletes is so simple to appreciate (and it is also one of the reasons why sportsmen can earn so much money). It is particularly the case in a sport like cricket where objective individual statistics are available. The best batsmen have the best averages and the best bowlers take the most wickets. Is there such a think as the best sports physician or the best physiotherapist? I imagine that many sports administrators would think that either there is no such thing, or that if there is such a thing as the best that it would be determined by the clinician who had the best personality and who was popular with the players.

I am a believer that there is such a think as quality in sports medicine and physiotherapy and that it probably plays more of a part in team success than administrators currently realise. However, it won't be lobbying that allows us to prove this point in the future. It will be statistics. We need to come up with our own objective performance indicators that can demonstrate our true value (or otherwise) to the teams we work with. Anything else is educated guesswork.

>> from Page 3

- Nutritionists have complicated matters to the extent where people feel they need an "expert" to tell them how to eat – something people had managed to do successfully without "experts" for millennia.
- "Low fat" foods are possibly worse for people than the original version because of the added ingredients used to replace the fat.
- The acceptability of any processed food is probably in inverse proportion to the number of added ingredients.
- A number of foods have been wrongly targeted as unhealthy. E.g. eggs.
- The big "no no's" in eating if you want to avoid excessive weight gain include: large (normal today?) portion sizes, eating alone and snacking and eating in front of the television.

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NB Footnotes in Sport Health.
Footnotes in Sport Health are designed to provide sufficient detail to allow a reader to access additional information through a standard web search engine. They do not attempt to conform to any standard academic standard.

Footnotes.

(1) George Santayana "Reason in Common Sense" (p. 284)

(2) L.P. Hartley "The Go-Between".

(3) Asics Conference of Science and Medicine in Sport, Hamilton Island, 16-18 October 2008.

(4) Morris JN et al. *Coronary heart disease and physical activity of work.* Lancet 1953.

(5) Paffenbarger RS, et al. *Work activity of longshoremen as related to death from coronary heart disease and stroke.* N Engl J Med 1970.

(6) Department of Health and Ageing, *National Physical Activity Guidelines for Australians*, website.

(7) Brown WJ, et al. *"How active are young adult women?* Health Promotion Journal of Australia, 2002.

(8) Brown WJ. *"Stand up, sit down keep moving: how much activity for a merry and bright old age?"* Refshauge Lecture, Asics Conference of Science and Medicine in Sport, 17 October 2008.

(9) Pate R, et al. "The Evolving Definition of Sedentary". Exercise and Sport Science Reviews, October 2008.

(10) Blair S, *"Physical inactivity: the biggest public health problem of the 21st century."* British Journal of Sports Medicine, 2009; 43.

(11) Moorhead G., *"Giving the Right Advice: making guidelines fit the available evidence versus KISS (Keep It Simple Stupid)"*, Sport Health, Autumn 2008.

(12) Olds T. *"Obesity Wars"*. Abstract. Journal of Science and Medicine in Sport 9:6. 2006 (Supplement).

(13) SMA submission to Preventative Health Taskforce, January 2009.

(14) Olds T. *"Childhood obesity epidemic a myth, says research"* reported in The Australian, 9 January 2009.

(15) Pollan M. LifeMatters, *"Old Food"*. Radio National 22 May 2008 and 19 January 2009. Also available from the SMA website.

Can soft tissue mobilisation be a stimulus for facilitating neuromuscular control and learning?

By Dr Andrew R Chapman

The importance of neuromuscular control

"Neuromuscular control" refers to the interaction between the neural and muscle systems and the resulting control of movement patterns and muscle recruitment patterns. This interaction is fundamental to all movement; a coordinated neuromuscular system effectively translates cardiorespiratory capacity into efficient movement. Neuromuscular control is therefore one factor that underpins athlete performance. The link between neuromuscular control and athlete performance is especially important in the context of endurance sports such as running and cycling, i.e. sports for which athletes repeat the same movement pattern over and over again, and who therefore rely very much on the efficiency of their movement. There is also a very strong relationship between neuromuscular control and musculoskeletal injury.

The example of triathlon

Success in triathlon depends largely on the triathlete's ability to run at maximum efficiency, and thus on optimal neuromuscular control (i.e. optimal movement and muscle recruitment patterns) when running "off the bike" (i.e. when running after cycling). Therefore, triathletes rely on their ability to develop a very high level of neuromuscular control for running (i.e. their ability to learn optimal neuromuscular control – or phrased more generally their ability to

learn a very efficient running stride) and subsequently on their ability to utilize this very high level control when running off the bike on race day (i.e. their ability to execute optimal neuromuscular control – to use what they have learned – and not let cycling "interfere" with neuromuscular control for running). Similarly, triathletes' preparation for competition involves large running volumes and practicing running after cycling. Evidence of the relationship between altered, or "underdeveloped", neuromuscular control and musculoskeletal injury suggests that the ability of a triathlete to complete large running volumes in training without injury is also dependent on their ability to learn and use movement and muscle recruitment patterns that are specific to running and not adversely influenced by cycling. Optimal neuromuscular control is clearly critical to triathletes' performance and injury, but our studies of triathletes demonstrate that both interference with neuromuscular learning and interference with neuromuscular execution can occur in triathletes and that this interference has implications for both performance and injury.

Interference with neuromuscular learning

In order to balance the training demands of the three disciplines, triathletes often practice two or three disciplines in one training session or complete separate training sessions for different disciplines with only short recovery periods between these sessions. While this "multidiscipline training structure" maximizes overall training volumes, our research has shown it might actually interfere with adaptation of the neuromuscular system – in other words, the ability of triathletes to learn more skilled and more efficient muscle recruitment patters appears to be limited, or "interfered with", because of the way they structure their training.

Interference with neuromuscular execution

Most triathletes show a decrease in run performance and report a perception of impaired coordination when running off the bike. While fatigue is likely to contribute to this perceived incoordination and loss of run performance, these effects may also be due to interference with neuromuscular control independent of fatigue. If this is the case, addressing fatigue alone (i.e. training our athletes to become "fitter" and more fatigue resistant) will not necessarily improve their ability to run off the bike. Indeed, our research has shown cycling can interfere with neuromuscular control of running independent of fatigue. While a mere 20 min of cycling has no direct effect on running neuromuscular control in most (70%) highly trained triathletes, we did show that running muscle activity is effected by a mere 20 min of cycling in 30% of highly trained triathletes. We also showed that this altered muscle recruitment is associated with reduced run economy (i.e. greater oxygen consumption and therefore less efficient running) and >2 times greater likelihood of a history of exercise-related leg pain (i.e. a history of shin pain, tibial stress fractures, etc).

Why would soft tissue mobilisation be an effective stimulus for facilitating neuromuscular learning and execution?

Soft tissue interventions, although rarely linked to neuromuscular control and learning in their efficacy, are a vital component of our management of performance and injury in endurance athletes, including triathletes. Neuromuscular control is clearly one factor that underpins athlete performance and musculoskeletal injury. Our research has also shown that interventions such as taping, orthotics and plyometrics appear to provide a stimulus to the neuromuscular system that may facilitate greater learning (i.e. greater neuromuscular adaptations) and improved execution (i.e. improved neuromuscular control during competition – in other words, an improved ability to use the high level of neuromuscular control that has been learned, rather than using a suboptimal level of neuromuscular control). While there is little evidence to support the efficacy of soft tissue therapy as such a stimulus for influencing neuromuscular learning and execution, there is a logical argument to suggest it may be effective in this way. The effectiveness of soft tissue interventions for e.g. achieving an immediate change in localised muscle tone and localised muscle recruitment, and the link between soft tissue intervention and improved athlete recovery, provide a basis for such an argument. On this basis, there is a strong case for future research investigating the effectiveness of soft tissue interventions as a stimulus for facilitating neuromuscular learning and execution. We suggest the possible effects of soft tissue interventions on neuromuscular learning and execution should definitely be considered by a) Soft Tissue Therapists, Physiotherapists, Osteopaths, etc, in their clinical decision-making process, and b) coaching and performance management staff in the planning of athlete management.

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Perspectives from Beijing

By Dr Liz Broad

In 2008 I was fortunate enough to be included as part of the canoe / kayak staff for the Beijing Games – my official title being "sports scientist" (the unofficial one being "jack of all trades and master of resourcefulness"!!), but naturally this incorporated my sports nutrition expertise. Canoe / kayak had 16 athletes across two disciplines – slalom who competed in the first week, and flatwater who competed in the second week. We also had a section manager, six coaches, a physiotherapist and myself – thereby exceeding our AOC staff allowance by three. Hence, three of us were required to 'share' accreditations with other Australian team staff, and were not able to live in the athlete village. The following is a small insight into my perspective of the food / hydration side of my role in Beijing.

Food:

Athlete Village

Food provisions within the athlete village were similar to other Olympics, with one main dining hall and a couple of smaller sub-sites. According to Prof. Louise Burke, the food hygiene and safety procedures were top notch, and certainly the Chinese worked extensively in the lead up to the games to source quality food suppliers. There did not seem to be any restrictions in taking food away from the dining hall – at least not that were policed strictly. Each of the apartments (housing 6-7 athletes or staff each) had a small fridge and a freezer shared between two apartments so there was suitable storage space. The Australian team members also had access to power bars, Powerade Recovery and Powerade Energy Edge, gels, muesli bars and liquid meal supplement powders through the AOC and Louise Burke. Louise also had gastrolyte (for hydration purposes) and slushees (used for pre-cooling) on tap, which could be frozen in a large freezer and taken to a venue in an esky for those sports who did not have access to their own slushee machine.

The main dining hall served food 24hr / day throughout the entire period of the games. On entry to the hall, there were fridges of drinks (water, Powerade and various Coca-Cola drink brands). Then there was the cold food section, which included salad items, breakfast cereals, breads, fruit, yoghurts, milk, nuts and dried fruits, and ice creams. At the back of the dining hall was all of the hot food servery. This was divided into sub-sections, such as Asian style, Western style, Pizza / Pasta. Unfortunately there were no signs up to indicate what was being served in each section each day, so athletes had to line up and see what was available when they got to the servery counter itself. If they didn't like it, they would have to turn around and line up at a different servery. Finally, in one corner was McDonald's, which from all accounts became extremely popular as the primary caffeine source until the queue became excessively long! I only ate in the main dining hall twice, so am unable to judge on variety and quality, however there weren't too many complaints from my athletes - generally a good indication that they had no difficulty finding suitable food.

The smaller dining areas were useful to save a bit of time or have a little more peace / 'intimacy' when eating. The range of options offered was more restricted than in the main dining hall, but there was enough to enable a full meal to be consumed. Drink vending machines were available throughout the village, and everyone who stayed in the village had a special key which enabled them to use the machines, according to an allowance (which was not very restrictive). There were signs up in all the rooms advising athletes not to drink the water from the taps, and there was always a plentiful supply of bottled water available at venues and throughout the village.

At the venue:

I was based at the canoe / kayak and rowing venue, so I will limit my description to what was available at this particular venue.

The canoe / kayak and rowing venue was located approximately 1hr drive (at best 45 mins) from the main village. Generally our athletes trained twice a day, which meant staying at the venue (or going to a nearby hotel, see below) rather than travelling back to

the village then out again for a second training session. At the venue there was one dining hall which provided lunch only to athletes and staff from all three disciplines from around 11.30 – 2pm. From the information I was able to obtain, this dining hall was not supplied from the athlete village. It generally served four hot options, three mixed salads, some cold meats, bread, fruit and a dessert. Disturbingly, the bain-marie items were not kept hot with a burner underneath – if one was put out initially, it did not appear to be replaced once it had gone out. Furthermore, the lids of the bain marie's were allowed to remain open – hence, raising concern about the food safety, especially in the latter stages of the serving period.

Another complication we experienced at the venue was that no sports drink was supplied at all by BOCOG during the training period – only water. Considering the athletes were there for nearly two weeks prior to the start of competition, it meant we had to rely on them bringing their own sports drink in from the venue OR supplying it ourselves, which was difficult as we were not allowed to bring bulk fluids into the venue through the main gates (the only way of entering!). After a day or two I found I was able to bring in a small quantity of sports drink slushees in my bag without the risk of them being confiscated at the gate, which worked reasonably well as it provided a backup when athletes forgot to bring their own supplies. These had to be frozen after making so I could transport them to the venue without the risk of them melting on the way.

Once the competition began, small athlete lounges were set up, which had hot and cold drinks, biscuits or Moon Cakes (a Chinese cake) and fresh fruit to snack on whilst the athletes watched the competition on TV.

At my hotel:

For the four weeks of the games I was located at a hotel close by the venue (less than 10 mins on a Chinese bike!). The Australian rowing team reserves and extra staff were also located there, as were some of the international teams, such as the entire Canadian flatwater canoe / kayak team. We had a recovery area set up here for the athletes to come to in between training sessions,

so they could relax in air-conditioned comfort, have a dip in the pool, and see the physiotherapist. It was also an area where we could store extra supplies of food and sports drink, make up slushees for pre-cooling, and freeze ice jackets / vests for the athletes to use. Where necessary we were also able to provide lunch, although this was rarely accessed by those living in the village.

Since this hotel was an official BOCOG "off-site" hotel, it was under tight security just like the village – I even had to open a can of Sustagen™ I'd brought for one of our athletes so they could see it was edible! It also meant their food supplies were strictly controlled and they did a much better job than the venue in terms of food safety. A dining hall was set up separately for athletes and staff (as opposed to other hotel guests such as family and friends), which provided three meals / day. There were always five-six hot options at both lunch and dinner, plus salads. These were a blend of Asian and Western styles – for example, at one sitting there might be roast beef, as well as a spicy chicken stir fry. There was always pasta and a rice served separately at each meal, and at least two vegetables. Most options could be considered moderate to low fat, although there was generally at least one high fat option at each meal. Certainly the lightweight rower reserves didn't have too many difficulties eating to maintain their weight restriction. Breakfast included eggs, bacon or ham, dumplings, fruit, juice, breads and a toaster, although the cereals were limited so we were very grateful to Louise who had also provided some home favourites!! My only complaints were that after four weeks there I knew the menu off by heart, high fibre options for breads / cereals were few and far between, and didn't want to see fried rice again for at least four years!

General Operations:

The games were run very well from an operational viewpoint. Everything was on time – buses, race times, and so on. However, there was also the need at times to work around the system, rather than with it. For example, the ice bath we had running at the venue during competition had to be hidden (thanks very much to good relationships with boat manufacturers!), since no electrical items were allowed to be brought into the venue by teams; apparently the Mexican team had a small freezer confiscated! This also meant that slushees had to be brought in through the gates rather than made on site, so thankfully we had large eskies supplied through the AOC which were used to store them in once I'd managed to get them into the venue itself.

In general, my experience in Beijing was exhausting and at times frustrating – the security and other aspects of an Olympic Games can understandably be very inflexible. So, what did we achieve? Well, apart from outstanding results by the athletes - 1 Gold, 1 silver, and 3 bronze medals - I walked away with the satisfaction of being a master at beating the Chinese Olympic system!

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Interested in promoting walking at work?

First things first, assess your workplace environment!

By Nicholas Gilson

1. Introduction

We are a group of researchers from ten different universities across the world. Our collaborative aim is to promote employee physical activity through workplace walking at each of our respective institutions. This article describes a pre-intervention audit of campus environments and comments on how well they lend support to our planned walking initiative. Reflections by lead investigators are used to highlight findings and challenges. Conclusions discuss implications for colleagues interested in promoting workplace walking.

2. Project Background

Encouraging people to be physically active through walking is a fun, practical and cost effective way of improving and maintaining health throughout the lifecycle. Every step is a step in the right direction for the inactive, with small increases in physical activity associated with steep reductions in chronic disease risk [1]. These small increases also provide a sound platform for the inactive to progressively move towards achieving recognized healthy guidelines for walking – current criteria advocate the accumulation of at least 10,000 daily steps as a minimal public health goal for adults. Importantly, 3,000 to 4,000 of these steps should be achieved through bouts of brisk walking, sustained for ten minutes or more [2].

Physical activity researchers and practitioners face the on-going challenge of how to effectively encourage people to walk more, and ideally attain these daily step targets. Our collaboration is focused on meeting this challenge within university workplaces. Universities typically employ large numbers of people and host even larger numbers of students - they therefore have the potential to engage a large cross-section of society in physical activity through walking. Student initiatives are important from a health promotion perspective, but we are presently targeting employees, given that these people are probably more at risk from chronic disease, through an older age profile and occupation types that involve high volumes of prolonged sitting and lower levels of walking. For example, recently published data, from three of our sites in Australia, Spain and the UK, found that during a typical workday, academics and administrators averaged less than 10,000 daily steps and sat for around six hours/day [3].

Other pilot data from some of our UK university employees have shown the positive impact walking interventions had on workday step counts, risk factors for chronic disease, productivity and job satisfaction [4, 5]. Following on from this success, we now stand on the threshold of implementing a large international study, involving each of our ten respective sites. One of the strategies we plan on using to try and encourage an increase in sustained step counts will be the use of route-based walking during work breaks. We have argued that the built environment, or the way in which we design our urban surroundings, will be one of the most important factors influencing this type of walking behavior [6]. With this in mind, we have recently audited our campus physical infrastructures, assessing the extent to which local environmental characteristics are able to support a route-based walking initiative.

3. The Audit Process

Our group selected an audit tool developed to assess workplace 'walkability" in nine specific areas [7]. These items are described by the inventory as "pedestrian facilities, vehicle conflicts, crossings, route-maintenance, walkway width, roadway buffer, universal accessibility, aesthetics and shade"; we changed this last item descriptor to "cover", which we considered to be equally applicable to sites with hot and colder climates.

Prior to using the audit tool, each lead researcher collected information on key campus characteristics (position, size and staff/student numbers) and identified key walking routes – researchers used their own discretion in selecting these routes, with the primary criterion for selection being major staff thoroughfares between buildings and facilities. The audit tool was then used to assess route "walkability". Local teams walked each route, measuring step counts with a pedometer and qualitative indicators of suitability were recorded, such as "good level of route-maintenance" or "high levels of traffic managed by appropriate pedestrian crossings". Immediately following completion of each route, quantitative ratings of the route's suitability were taken, and these were scored on a scale of 1-5 (poor-excellent) for each inventory item.

In carrying out this audit process, our key concern was how we standardized scoring across sites. Ordinarily, this could be achieved through site visits by a coordinating researcher. However, in our case this was not possible given that our collaboration was occurring across ten campuses in five different countries. We overcame this problem by posting digital recordings of routes on the internet before sites went ahead and began their audits; lead researchers scored these routes, with the group contrasting data to establish protocol and audit comparability. This process was repeated in person at the local level, to ensure comparable scoring between site teams.

4. Audit Outcomes

The local auditing process took between one and two weeks to complete, with

time demands dependant on the number of routes and researchers within each team. Quantitative data was entered into a standardised Excel template and sent to a coordinating researcher for collation and site comparisons. Local teams have recently triangulated inventory scores with qualitative data to form a précis of their campus physical infra-structures, with a view to identifying environmental strengths and weaknesses. The following provides an initial insight into audit outcomes as they relate to each site - lead researchers highlight key campus characteristics and reflect on the local challenges audit data raise for route-based walking.

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Our walking initiative will take place at the Polytechnic campus, a 660 acre site that was once entirely a US Air Force Base (Williams Air Force Base). The acquired land is located approximately 25 miles from the main campus in Tempe, Arizona. The site hosts around 700 employees and 9,300 students.

We identified 13 key routes around campus. The average length of these routes was 645 steps, with length ranging from 112 to 1,449 steps. Inventory items showed that these routes were generally difficult to negotiate with lack of suitable walking surfaces and insufficient connectivity. The majority of the routes lacked the presence of crosswalks and buffers creating potential conflict with motor vehicle traffic. Routes that were recently reconstructed have made an effort to utilize landscaping to steer people on the appropriate and safest paths toward the point of entry for buildings. They have also made efforts to incorporate safety, disability access, cover, and the creation of green space for recreational purposes.

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Our walking initiative will take place at the university campus, which is a 437 acre, well-established, suburban green-field campus, situated adjacent to the small university market town of Loughborough in the centre of England. The site hosts around 3,100 employees and 15,500 students.

We identified 17 key routes around campus. The average length of these routes was 574 steps with length ranging from 310 to 1,057 steps. Inventory items showed that these routes were generally well-maintained, accessible, and attractive. However, our audit raised specific challenges which we need to consider - the buffer between the pedestrian and other traffic was often quite small and this may be considered an aspect of the environment that is not conducive to encouraging walking. Moreover, the routes were rated less positively in respect to pedestrian crossing facilities.

Guy Faulkner, Faculty of Physical Education and Health, University of Toronto, Canada.
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Our walking initiative will take place at the main university site which is approximately 316 acres in size. The urban campus is embedded centrally within the city of Toronto. Accordingly, the 'grid' network and high street connectivity of the campus lends itself to 'walkability'. The site hosts approximately 7,500 employees and over 50,000 students.

We identified 23 key routes around campus. The average length of these routes was 475 steps with length ranging from 175 to 849 steps. Inventory items demonstrated that these routes were well-maintained, accessible, and with appropriate pedestrian facilities including traffic-controlled crossings. Given the setting, some routes are alongside very busy streets with less than ideal buffers between the traffic and pedestrians. Some routes can be challenging to walk in winter because of snow and ice. Cover is particularly problematic at this time (January-February). Having said this, our initial focus at the University of Toronto will be on how to increase walking when the conditions are most conducive to that behavior (spring, summer and fall).

Nicholas Gilson, The School of Human Movement Studies, The University of Queensland, Australia.
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Our walking initiative will take place at the main university site, which is a 282 acre, well-established, suburban green-field campus, situated in a bend of the Brisbane River, seven kilometres to the South of the city's central business district. The site hosts around 4,500 employees and 34,500 students.

We identified 21 key routes around campus. The average length of these routes was 654 steps, with length ranging from 190 to 3,543 steps. Inventory items showed that these routes were generally well-maintained, accessible, with low levels of vehicle conflict; where this did occur, right of way was provided for pedestrians through traffic-controlled crossings. Our challenges concern walkways that traverse parkland; these were often lacking in natural and artificial cover. Our hot and humid summer will make walking on these routes difficult at lunch times. Also, buffers between pedestrians and cars were sometimes poor and this factor may discourage our employees from walking particular routes.

Marie Murphy, School of Sports Studies, University of Ulster, Northern Ireland.
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Our walking initiative will take place at the Jordanstown Campus, which is a 116 acre, well-established, suburban green-field campus, situated on the shores of Belfast Lough, eight kilometres to the north-west of the city. The site hosts around 3,000 employees and 23,000 students.

We identified ten key routes around campus. The average length of these routes was 398 steps with length ranging from 155 to 777 steps. Inventory items showed that these routes were generally well-maintained, accessible, with moderate levels of vehicle conflict; where this did occur, right of way was provided for pedestrians through traffic-controlled crossings. Inventory data raised concerns that many of our walkways were narrow with few buffers between traffic and walkway. Routes also tended to lack cover and light. The elevated position of the campus, wet prevailing conditions and failing light presents a challenge to the sustainability of route-walking through our winter months.

Ailsa Niven, School of Life Sciences, Heriot Watt University, UK.
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Our walking initiative will take place at the main university site, which is a 200 acre campus of mature meadow and woodland to the west of Edinburgh, approximately ten kilometres from the city centre. The site hosts around 1,600 employees and 6,800 students.

We identified 12 key routes around campus. The average length of these routes was 521 steps, with length ranging from 70 to 1050 steps. Inventory items showed that these routes were generally well-maintained, with adequate walking space provided, relatively low levels of vehicle conflict and a good level of buffer area between walking areas and roads. The attractiveness of the routes varied with some functional routes between buildings and others incorporating more greenery and space, highlighting the potential for a pleasant walking environment on campus. The accessibility of the walking routes for less able bodied people could be improved. There were limited routes offering shelter or shade, which could be important because Edinburgh has occasions of cold and wet weather, and this is a commonly cited barrier to physical activity.

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Our walking initiative will take place at the Headingley Campus, which is located on 100 acres of parkland next to Beckett Park. The campus is situated three miles to the North of the City of Leeds in the UK and hosts around 3,600 employees and 14,000 students.

We identified 28 key routes around campus. The average length of these routes was 140 steps, with length ranging from 99 to 448 steps. In summer, inventory items showed that these routes were generally well-maintained, accessible, with low levels of vehicle conflict; where this did occur, right of way was provided for pedestrians through traffic-controlled crossings. Many walkways traversed parkland, however routes were often found lacking in natural and artificial shelter and some in parkland were not paved or graveled. This is important as Leeds has a changeable annual climate with cool, rainy and windy conditions possible any time of year. Heavy rain leading to muddy and slippy walking surfaces potentially discourages employees from taking longer walks in the aesthetic parkland within the campus.

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Our walking initiative will take place at the only campus of the university, which is a small, 7 acre, urban campus, situated one kilometre away from the city centre. The site hosts just under 700 employees and around 8,000 students.

We identified 10 key routes around campus. The average length of these routes was 823 steps, with length ranging from 380 to1,503 steps. Overall, walking routes were perceived as highly walkable on inventory items. For example, routes were well maintained and self-contained within the campus; they rarely came into conflict with traffic. However, routes often lacked cover and shade and this may be a problem for sustainability of route-walking through winter and summer. In addition to this, our team also faces the challenge of implementing route-based walking on a small campus, with a limited number of routes. We will be looking at ways in which we can connect campus and non-campus routes, to provide variability and choice for our employees.

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Our walking initiative will take place at the main university site, which is a 200 acre, friendly, suburban green-field campus, situated at the top of a hill at Claverton Down, overlooking the UNESCO World Heritage city of Bath. The site hosts around 2,600 employees and 13,000 students.

We identified 20 key routes around campus. The average length of these routes was 1002 steps, with length ranging from 176 to 2884 steps. Inventory items showed that these routes were well-maintained, with low levels of vehicle conflict. Cover for walking was found to be acceptable and routes were aesthetically pleasing with designated lunchtime walks in woodland areas on the periphery of the campus. Our lowest scoring item was "accessibility" and while route scores were acceptable on this aspect of physical-infrastructure our team will be looking at ways in which employee access from buildings and facilities can be improved – this will be particularly important for less able bodied people.

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The University of Alabama is an inner city, residential campus that includes approximately 1,000 acres, located in the heart of Tuscaloosa, a west central Alabama city of approximately 78,000 residents situated on the Black Warrior River. In 2007, the University of Alabama was home to approximately 3,021 employees and 25,580 students.

Twenty-six key routes were identified around campus using campus maps and input from Faculty, staff, and the University Planner and Designer. The average length of these routes was 1,090 steps, with length ranging from 309 to 2,959 steps. Inventory items revealed that these routes were generally well-maintained with accessible, barrier-free sidewalks, averaging acceptable width; moderate aesthetic appeal, often due to current campus construction; and moderate potential for vehicle conflict. However, most major intersections on campus provided traffic controlled cross-walks for pedestrians. Many walkways traversed green space, yet routes generally only provided moderate natural or artificial cover and shade – this may be a challenge given Tuscaloosa's subtropical climate, which provides a mild winter, but a hot and humid summer. Finally, due to relatively recent support for a Master Plan to enhance the campus aesthetics and provide a more pedestrian-friendly campus, several specific events have created changes in walking routes and potential confusion in campus navigation. These changes have included moving parking to the periphery of campus and introducing a campus transit system, several bike lanes, more sidewalks and trails.

5. Conclusions and Key Message

Overall, the findings of this ten site audit show that our university campuses are generally well-suited to support a route-based walking initiative. Having said this, some offer better support than others and inventory items provide valuable insights into where we might target efforts and resources to maximise impact prior to intervention. Physical infra-structure characteristics which warrant attention include "connectivity and variety of walkways, accessibility, traffic buffers, crossings and cover". This latter characteristic was considered a particular issue for many lead researchers. How we resolve this issue, and sustain route-based walking in hot and colder climates, will be a major

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Sports Dietitian Kerry Leech speaks with Sharelle McMahon, captain of the Melbourne Vixens Netball team.

Q. What is your favourite food?
I'm a little partial to chocolate but my favourite meal is chicken and vegetable risotto.

Q. Cereal or toast for breakfast?
Definitely a cereal girl, eating muesli, yogurt and milk helps me to keep going through the morning.

Q. Sharelle, you are working with Netball Victoria as well as playing and training with the Vixens - how do you fit it all in?
I'm very busy. I manage it with a very up to date diary!

Q. So how do you manage healthy meals on the run?
I need to be organised and pack food each morning. It makes drinks like Sustagen important as I can have them in the car on the way to or after training.

Q. What flavour Sustagen is your favourite?
That's easy, Chocolate - I told you I am a chocolate girl!

Q. How do you feel Sustagen helps your recovery?
Netball is a hard game, I tend to come out of each game with a few bumps and bruises. Sustagen after each game helps to get the recovery process started and provides a great source of protein and carbohydrate.

Q. So what now for Sharelle McMahon?
The Vixens are finished for the season but the Australian team has international matches over the next few months against New Zealand and England. So plenty of training camps, travel and tough matches. No slowing down for me!

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Sports Personal accident insurance: Are you really covered?

By Nello Marino

In a recent edition of Sport Health (Winter 2008) Gary Moorhead alerted us to 'Doing the Right Thing' in which he highlighted the importance of ensuring the right balance of injury prevention information and strategy included in programs which promote sport and physical activity.

The article cited a number of anecdotes describing 'senior' SMA office holders, a manager and an associate who had recently become injured in their endeavour to embrace a more active lifestyle which was most likely more reflective of their activity in years past. The article suggested that the injuries suffered by these individuals may have been prevented had a more conservative, considered and informed approach been taken in their return to activity.

Having a very close association with at least one of the injured parties referred to in these anecdotes prompted some discussion about sports insurance, most notably personal accident insurance, and provided an opportunity to outline just what exactly what is and isn't covered by these types of insurance in situations where someone is injured whilst participating in a sporting activity.

An article published in 2006 by Rod Hughes of OAMPS Insurance Brokers provides a wonderful summary of these types of insurance and the following includes article extracts and a summary of the key points raised regarding sports personal accident insurance.

Many would be well aware that sporting organisations including clubs and associations carry a variety of insurances. The sport specific range of sports insurance available to sporting organisations are typically public liability, professional indemnity, directors and officers (also known as Association Liability) and personal accident covers. Whilst millions of dollars in claims are made each year, most claims are associated with Personal accident insurance.

Sports Personal accident insurance is likely to vary from one insurer to another. This applies to the benefits provided, the sums insured and the terms and conditions applicable to the policy. Two policies may have the same sums insured, however what is covered and how claims are settled may be entirely different.

But who is covered under the sports personal accident insurance? In most instances this refers specifically to the players participating, but does not always necessarily include coaches, referees and other officials and volunteer workers of the organisation. This being the case insurers may provide flexibility as to who is to be insured under the policy, but sporting organisations and 'participants' need to be aware of what is stated in the policy and/or schedule.

The intent of sports personal accident insurance is to protect participants whilst they are involved in the activities of the sport. Policies will often provide cover when insured people are participating in games and training, attending official social functions of the sport, involved in administration and other volunteer activities of the sport, travelling to and from those activities already mentioned and also staying away from home for the purpose of taking part in a competition, match or training session.

In order to make a claim under the policy an injury (or death) to a participant needs to occur. But what is the definition of an injury in these circumstances? This will vary from policy to policy, but definitions usually refer to bodily injury (or death) resulting from an accident, being a sudden, unexpected, specific event occurring at a definable place or time and occurring solely and directly from the accident and independently from any other cause. Policies will usually further clarify this definition by specifically excluding sickness and pre-existing injuries or congenital conditions. Such definitions and conditions then generally exclude heart attack from being covered under these sorts of policies.

Whilst sports personal accident policies may contain additional benefits there are three areas that form the 'core' of the cover and therefore attract the most attention. These areas are Capital Benefits (Death and Permanent Disability), Loss of Income and Medical Benefits. It is these areas that we will focus on in this article.

The Capital Benefits cover relates to more serious injuries – those involving Death or Permanent Disability. The policy will provide a scale of Capital Benefits, which will list various Permanent Disabilities and state what percentage of the Sum Insured applies to that particular Permanent Disability.

Loss of Income cover, as the name suggests, addresses the situation where an insured person is injured whilst participating in the sport and cannot attend his/her normal occupation, therefore losing income. Important matters are the amount of weekly benefits applicable to the policy, the number of days excess (e.g. a 7 day excess means that the player will not receive benefits for the first week of disability) and the maximum period for which weekly benefits will be paid (e.g. a common maximum period is 52 weeks, meaning the injured player is entitled to receive weekly benefits for up to one year).

The amount the policy will pay is usually a set percentage of the actual income lost (e.g. 85%) up to a maximum of the specified weekly sum insured. This nominated percentage goes towards determining the value of the policy, but perhaps even more important is the matter of how the loss of income benefit is paid. Receiving benefits periodically (e.g. monthly) is obviously much more practical than a situation where the benefit is paid lump sum when the injured party has recovered and returned to his/her occupation, as may be the case under some policy wordings. In the event of long periods of time off work the injured player will generally need regular payment to meet everyday living necessities.

Medical Expenses – or to be more precise non-Medicare Medical Expenses. This is the area of sports insurance cover where the highest number of queries is received – contributed to by the fact that this is the area where most claims are made, but also because government legislation restricts what the insurer can pay. The Health Insurance Act 1973 Section 126 prevents a general insurer from paying any benefits on medical expenses which are entitled to a Medicare rebate – this includes not being able to pay the Medicare 'gap'. Therefore it is only on non-Medicare medical expenses that a sports insurance policy is able to provide a benefit, being medical expenses such as Private Hospital (accommodation and theatre fees), Dental, Ambulance, Physiotherapy, Osteopath and other remedial therapies.

The insurance benefit will be reimbursement of a nominated percentage of these non-Medicare medical expenses up to a maximum amount per player per injury. An excess will apply, which means that the excess amount will be deducted from the benefit paid. Again the percentage reimbursed, the maximum benefit and the excess amount all contribute to evaluating the value of the cover provided, as does the matter of whether expense reimbursements are paid periodically or at the end of the treatment period when the player has recovered.

Sports personal accident insurance is a commonly provided policy of most sporting organisations and competitions. However all participants, including coaches and officials, should familiarise themselves as to whether this is the case in their sporting circumstance.

From personal experience as a recently injured participant it gave me some comfort to know that the thousands of dollars of non-medicare expenses spent predominantly on physiotherapy would be reimbursed, at least in part.

Many thanks to Rod Hughes from OAMPS Insurance Brokers for his permission to reproduce parts of his article 'Sports Personal Accident Insurance'.

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challenge – in light of the resource we have and a tight intervention start-time, providing additional campus cover to existing routes could be unrealistically. An alternative may be to provide indoor route-options for staff during inclement weather.

Beyond the immediate needs of our own project, this article highlights a valuable audit tool and process. We faced a number of challenges in standardizing auditors, both between and within sites, yet overcame these challenges successfully through the creative use of internet technology and the sharing of best practice and expertise. These learned experiences provide a simple message for other researchers and practitioners interested in promoting workplace walking – namely, assess and audit your physical environment before intervention, with a view to using audit data to adapt strategies where possible. As our campus audits demonstrate, this process is particularly important for multi-site, international initiatives, with varied physical and geographical landscapes.

Useful Sources

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For further details on this article and information on the "International Universities Walking Project" contact the coordinating researcher Dr Nicholas Gilson, School of Human Movement Studies, The University of Queensland, Brisbane, Australia. Tel: +61 (0)7 336 56114 or email n.gilson1@uq.edu.au

Footballers and Fortitude –

Why Icons of the game can 'lose it'

By Dr Clive Jones

It's understandable why a lot of footy fans from all codes are scratching their heads over the number of professional players caught for illicit drug use, violent behaviour and general unruliness off the field. Before I offer some explanation as to why this might be occurring in some instances, it's important to point out that there are no solid statistics to suggest that such behaviour is any more prolific in footy players than in the general population. So in this sense – people are people.

So when looking at this issue we first have to accept that such behaviour is going to stand out much more in the public eye with a high profile personality than with a Mr or Ms anonymous behaving in the same way.

Even so, it is still fair to say that the general community, fans, the families of those affected, coaches and the respective CEO's are genuinely concerned over such behaviour's and see it as a significant issue to be addressed. As an initial step to understand how such issues may arise, I have provided five different reasons why some footy players of all codes can be prone to 'lose it' on and off the field.

Five factors that can contribute to players 'losing it' on and off the field

1. Being hostile rather than instrumental in their aggression

One factor for some players is the difficulty in differentiating between instrumental aggression and hostile aggression. It's obvious that all codes of football are aggressive sports. Particularly in league and union where good play involves hitting hard in tackles and making the opposition hurt. In balance, and with the proper boundaries in place, this is all a part of the excitement and challenge for both the fans and players alike. Unfortunately though, some players do find it difficult to draw the line between *instrumental aggression*; that is within the rules of the game with a goal beyond the aggressive act itself, and *hostile aggression*; that is void of any other purpose apart from the primary goal of inflicting injury or harm on someone else. The player who can hold a strong moral code of *keeping the aggression within the rules of the game in order to achieve a higher goal beyond the aggressive act itself* is in a better place for keeping their behaviour in check than the player who keeps their aggressive behaviour focused on simply inflicting harm on the opposition.

2. Not knowing where to draw the line

For some players it's the simple mistake of not being able to keep their aggressive play on the field. Being all keyed up to be aggressive on the field can be a difficult thing to wind down from after the game has ended. Switching aggressive mindsets on and off between games and training sessions is a tough call. But what makes it tougher is when the player is switching on hostile aggression rather than instrumental aggression. Instrumental aggression is kept within the boundaries of the game and therefore it's easier to switch off from it once the game is over. Hostile aggression on the other hand is behaviour less associated with the game because it lies outside the rules and it is not connected to any specific goal within the game either, other than to hurt someone else in opposition to them. This type of aggression finds it easier to permeate into the rest of the player's life outside of sport making them at greater risk of aggressively hostile outbursts throughout their daily life, normal routines and relationships whenever someone is in opposition to them.

3. Having a limited self image

For some players a large portion of their self image is built around their tough and aggressive play. One reason for this is because players will often be rewarded for aggressive acts on the field either directly or indirectly. Things like pats on the back, cheers from the fans, affectionate nicknames derived from incidents of hostility and a range of other factors can reinforce and encourage a player to see their hostile acts as a significant and highly valued part of themselves. For the young, growing personality looking for a sense of self and clarity of identity it can be a significant trap where they foreclose their identity by shutting out the broader qualities of who they are and instead take hold of a hostile stereotype instead. When hostile aggression stems from the players sense of self it becomes a difficult thing to address. This is because for the player in this mindset, there is more at stake than simply changing behaviour. Changing hostile behaviour in this instance would mean giving up what they have come to believe is a highly valued and esteemed part of them selves. To give up the hostile aggression for this player means to give up a very significant part of who they believe they are.

4. Misunderstanding what it means to be a tough bloke

The *tough bloke mindset* is prolific in all codes of footy. This manifests in the perspective of *'tough blokes don't cry they just punch walls'*. In the footy culture of toughness, aggression is often the only intense emotion that is readily accepted and understood. Other emotions like grief, sadness, depression, fear and anxiety can be prone to suppression in the *'tough guy'* environments leaving a lot of emotional baggage hanging around. One way to keep those other emotions at bay is by self medicating through alcohol or other forms of illicit drug use. It takes a lot of courage to face the full spectrum of emotions that conjure up from within us at different times. Being stuck in the culture of the *tough bloke mindset* can have a man deny the essence of what it means to be human. This will only ever lead to personal trouble and distress.

5. Being too narrow in focus

Something that is prolific in high performance sport is for athlete's to get caught up in a narrowed competitive focus beyond the scope of their competition and training sessions. Athletes need to narrow their focus to allow for all other distractions to be put on hold and out of the way while focusing intently on the game or training session at the time. It's important to do this. A distracted player performs poorly and is also at greater risk of injury. Unfortunately though, some athletes and support staff think this narrowed focus should be maintained beyond the sporting field into everyday life. This can result in an imbalanced perspective that can promote quite a selfish and self indulgent point of view. To be locked into a mindset 24/7 whereby the only thing that matters is the game and every other issue in life is ignored or considered insignificant in comparison to the competitive goal of the athlete is a very ineffective mindset to hold for life outside the weekend game plan and weekly training sessions. It only results in a neglect of the athlete's broader life goals, responsibilities and commitments to the detriment of the player and those closest to them.

The bottom line is there is more to life than sport. It is when the player has their professional career in perspective with the rest of their life, and holds due consideration for others around them, that they are more likely to maintain a healthy and more balanced approach to life on and off the field. Aiding in the achievement of this can be done through the coach, support staff and the athlete intentionally addressing the areas of concern mentioned above.

By Dr Clive Jones Dipt, DipLifeCoach, DipCouns, BEd, MEd, GradDipPsych, PhD(psych), MAPS., CoCouns, CoSp

Dr Clive Jones is an Assistant Professor of Sport Psychology at Bond University.

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What's happening at "be active '09"...

By Davina Sanders

Brisbane is set to host the paramount sports medicine, sports science, sports injury prevention and physical activity promotion conference in Australia - ***"be active '09"***, from 14 - 17 October 2009.

be active '09 combines the 2009 Australia Conference of Science and Medicine in Sport *"Active Sports Medicine for all"*, the Seventh National Physical Activity Conference *"ReActivating Australia"* and the Sixth National Sports Injury Prevention Conference *"Staying Safe to Be Active"*. ***be active '09*** brings together some of the finest speakers from Australia and around the world to present a comprehensive scientific forum on all facets of these fields - from elite performance to community participation in sport, physical activity and their impact on individual and public health.

be active '09 is a multi-disciplinary event. It will bring together the most influential researchers and practitioners in these fields. The conference showcases the latest developments through keynote and invited presentations, symposia, practical workshops, free papers, posters and a trade exhibition. It will also provide extensive networking opportunities.

The goal of ***be active '09*** is to provide a scientific forum in which delegates from Australia and around the world can come together to discuss and debate the latest scientific research and evidence on all forms of physical activity - from elite sport to walking in local communities. An emphasis will be placed on identifying areas of scientific knowledge that will be of greatest interest to practitioners and policymakers. The anticipated outcome of ***be active '09*** is to assimilate, interpret and share scientific evidence with key stakeholders who are in a position to develop recommendations concerning effective policies and programs within their own jurisdictions.

Speakers include:

Dr Caroline Broderick
Senior Lecturer, Sports Medicine Program, School of Medical Sciences, The University of New South Wales

Mr Mark Fenton *(Asics Sponsored Speaker)*
National Center for Bicycling and Walking & the University of North Carolina's Pedestrian and Bicycle Information Center

Refshauge Lecturer
Professor Caroline Finch *(Australian Sports Medicine Federation Fellows Sponsored Speaker)*
NHMRC Principal Research Fellow, School of Human Movement and Sport Sciences, University of Ballarat

Dr Marc Hamilton
Associate Professor of Biomedical Sciences, Dalton Cardiovascular Investigator, University of Missouri

Professor Stephen Harridge
Professor of Human and Applied Physiology, Division of Applied Biomedical Research, School of Biomedical and Health Sciences, King's College London

Dr Karl Landorf
Senior Lecturer and Research Coordinator, Podiatry Department,

Call for Papers be active '09

3 concurrent events

2009 Australian Conference of Science and Medicine in Sport

"Active Sports Medicine for all"

Seventh National Physical Activity Conference

"ReActivating Australia"

Priority will be given to papers relating to the following conference themes: *Settings approaches - integration across policy and interventions ~ Sedentary behaviours / sitting time and workplaces as a setting for intervention ~ Supportive environments and supportive environments planning ~ Priority population groups ~ Secondary and tertiary prevention ~ Children and adolescents ~ Advocacy, communication and social marketing*

Sixth National Sports Injury Prevention Conference

"Staying Safe to Be Active"

14 - 17 October 2009, Brisbane Convention & Exhibition Centre

INVITATION

The organisers invite the submission of abstracts that address the overall conference theme "be active '09" in sports science, sports medicine, physical activity promotion and sports injury prevention.

We encourage all researchers, practitioners, policy makers and students who wish to present their work to submit abstracts for presentation at the ACSMS, the NPAC, or the NSIPC.

All abstracts must be submitted online at www.beactive09.com and must be received by 31 March 2009.

SUBMISSION

Each conference has its own submission form and you must complete one form for each abstract you are submitting for review.

You must tick the boxes on the submission form to indicate the main focus of your abstract, and to identify your submission as a 'free paper' or as one of a group of papers which are being submitted as a symposium.

CONFERENCE HIGHLIGHTS

~ Speakers including:

- *Refshauge Lecturer* Professor Caroline Finch
- Mr Mark Fenton
- Associate Professor Marc Hamilton
- Professor Willem van Mechelen
- Dr Lorimer Moseley
- Dr Chris Rissel

~ Innovative research presented at free paper and poster sessions plus hands-on workshops

~ Earn professional development points

Faculty of Health Sciences, La Trobe University

Dr Michael Lloyd
Assistant Sport Psychology Network Coordinator, Queensland Academy of Sport; Sport Psychology Consultant / Service Provider, Australian Institute of Sport

Professor Thomas Marwick
Professor of Medicine, University of Queensland, Princess Alexandra Hospital, Brisbane

Dr Lyle Micheli
Director, Division of Sports Medicine, Children's Hospital Boston
Clinical Professor, Orthopaedic Surgery, Harvard Medical School, Boston, Massachusetts

Dr Lorimer Moseley
Senior Research Fellow, Prince of Wales Medical Research Institute, Sydney

Dr Chris Rissel
Director, Health Promotion Service, Sydney South West Area Health Service
Associate Professor, School of Public Health, University of Sydney

Dr Mark Tarnopolsky
Professor of Pediatrics and Medicine, Hamilton Hospitals Assessment Center Endowed Chair in Neuromuscular Disorders, Director of Neuromuscular and Neurometabolic Clinic, McMaster University Medical Center, Hamilton, Ontario

Professor Willem van Mechelen
Head, Department of Public and Occupational Health, Co-director EMGO Institute, VU University Medical Center, Amsterdam

Detailed biographies and areas of interest can be found at http://www.beactive09.com/speakers/default.asp

Sessions include:

- Sports medicine
- Clinical physiotherapy
- Nutrition and Physiology
- Sports injury treatment and prevention
- Biomechanics
- Shoulder
- Motor control
- Settings approaches - integration across policy and interventions
- Sedentary behaviours / sitting time and workplaces as a setting for intervention
- Supportive environments and supportive environments planning
- Priority population groups
- Secondary and tertiary prevention
- Children and adolescents
- Advocacy, communication and social marketing
- Sports psychology
- Pain
- Knee / ACL
- Foot & Ankle
- Paediatric exercise science
- Schools and Injury Prevention
- Research practice translation
- "Best of the Best". Best Paper winners will present again in a final plenary session to determine the winner of the Asics Medal and $5000 prize for Best Paper overall.

Workshops (Pre-booking essential)

A wide range of hands-on clinical workshops as well as the following new areas:

- Sports Medicine Emergency Care for Health Professionals
- Business and practice development for health professionals
- Talking to and using the media
- Health impact assessments
- Designing, implementing, and evaluating physical activity interventions
- Assessing physical activity
- CPR accreditation

Posters

A stand-alone Poster session presenting the latest research in sports medicine and science, physical activity and sports injury prevention research (with wine).

Research Prizes

Sixteen research awards valued at $28000 in total for the best research presented.

be active '09 Conference Research Awards (The Australian Sports Medicine Federation Fellows Awards):

The Australian Sports Medicine Federation Fellows' Awards 2009 are:

ASICS Medal - Best Paper Overall
$3000 prize (plus cash component from qualifying prize)

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INFORMATION

- All abstracts must be unpublished original work and not previously presented in Australia
- Researchers are also invited to join with colleagues to submit a group of three or four abstracts which focus on any aspect of the conference theme to be presented in a single symposium session. Please refer to the online submission forms for further details
- All accepted abstracts will be published in a December 2009 supplement to the Journal of Science and Medicine in Sport, providing registration fees have been paid by the 31 August 2009
- Accepted abstracts may be eligible for one of the prestigious Australian Sports Medicine Federation Fellows Awards*. A complete list of awards and conditions will be posted on the website

* To qualify for a conference award the presenting author must register for the full conference and be a member of Sports Medicine Australia. Membership is open to both Australian and international delegates. Further conditions apply for abstracts short listed for awards. See website for details.

Abstracts are to be submitted online at www.beactive09.com. If this method is not possible please contact the Conference Secretariat.

DEADLINES

Abstract submission **31 March 2009**

Early bird registration **31 July 2009**

Author registration **31 July 2009**

Website **www.beactive09.com**

- For online submission of abstracts
- To register interest in the conference
- For more information on trade and sponsorship opportunities

For further information please contact:
Sports Medicine Australia, PO Box 78, Mitchell ACT 2911
p: +61 2 6241 9344 | f: +61 2 6241 1611 | e: acsms@sma.org.au


What happened at the 2008 Conference?

The 2008 SMA national conference, the Asics Conference of Science and Medicine in Sport at Hamilton Island in mid October was again a highlight of the year. A total of 389 attended the conference, including 50 overseas delegates, featuring more than 200 presentations.

SMA owes a debt of thanks to the organising committee Associate Professor Jill Cook, Professor Wendy Brown and Dr Anita Green. We would also like to say a big thank you to Mark Doherty and Asics Tiger Oceania for sponsoring a 2nd boutique conference in another fantastic location. Some candid (and not so candid) photos are available at http://www.sma.org.au/ACSMS/2008/photos.asp and abstracts will again be published as an electronic supplement to the Journal of Science and Medicine in Sport (JSAMS).

Mr Andrew van Essen, a Podiatrist from Adelaide, was welcomed into the Australian Sports Medicine Federation Order of Fellows at the Fellows AGM and Dinner at the Conference.

Fellows President Dr Shane Conway and new ASMF Fellow Mr Andrew van Essen

Details of the Conference research award winners are listed below.

Congratulations to the following **2008 Australian Sports Medicine Federation Award winners**:

Asics Medal - Best Paper Overall ($5000 prize including Presentation Package at ACSM)
Mr James Gaida, Deakin University
Patients with chronic painful mid-portion Achilles tendinopathy have a dyslipidaemia that is characteristic of insulin resistance
Co Authors - L. Alfredson, Z. Kiss, J. Cook & H. Alfredson

Asics Medal winner Mr James Gaida and Mr Mark Doherty from Asics

Asics Best Paper - Clinically Relevant Conditions ($2000)
Dr Dennis Taaffe, The University of Queensland
Alterations in muscle attenuation following detraining and retraining in resistance trained older adults
Co Authors - T. Henwood, M. Nalls, D. Walker, T. Lang & T. Harris

Asics Best Paper - Performance Enhancement and Basic Science ($2000)
Dr Stephan Riek, The University of Queensland
Superimposed vibration confers no additional benefit compared to resistance training alone
Co Authors - A. Popple, S. Verscheuren & R. Carson

Asics Best Paper - Health Promotion ($2000)
Dr Nicola Burton, The University of Queensland
HABITAT: Is living in a disadvantaged area associated with mid aged residents' physical activity and use of recreational facilities?
Co Authors - G. Turrell, L. Wilson & K. Giskes

Asics Best Paper - Injury Prevention ($2000)
Dr Rebecca Dennis, The University of New South Wales
Throwing workload and injury risk in elite Cricketers
Co Authors - R. Saw, D. Bentley & P. Farhart

Asics Best Paper - Lower Limb ($2000)
Dr Natalie Collins, The University of Queensland
Contoured prefabricated foot orthoses are superior to flat inserts in the short term management of anterior knee pain
Co Authors -K. Crossley, T. McPoil & B. Vicenzino

Ken Maguire Award for Best New Investigator - Clinically Relevant Conditions (Presentation package at ACSM)
Mr James Gaida, Deakin University
Patients with chronic painful mid-portion Achilles tendinopathy have a dyslipidaemia that is characteristic of insulin resistance
Co Authors - L. Alfredson, Z. Kiss, J. Cook & H. Alfredson

Asics Award for Best New Investigator - Lower Limb
(Presentation package at ACSM)
Mr Kent Sweeting, Griffith University
Achiliies tendinosis: How does prolotherapy compare to eccentric loading exercises
Co Author - M. Yelland

John Sutton Award for Best New Investigator - Performance Enhancement and Basic Science
(Presentation package at ACSM)
Mr Simon Dannapfel, Waikato Institute of Technology
The acute effect of prolonged intense cycling and blackcurrent extract on protein carbonyls in well-trained male cyclists
Co Authors - T. Lowe & R. Cummins

NSW Sporting Injuries Committee Award for Best New Investigator - Injury Prevention ($2000)
Dr Dara Twomey, University of Ballarat
Do hard playing fields increase the risk of injury in community level Australian football
Co Authors - L. Otago, C. Finch, I. Chivers & J. Orchard

Asics Award for Best New Investigator - Health Promotion ($2000)
Dr Mitch Duncan, Central Queensland University
Association between degree of urbanisation, physical activity and perceptions of the environment in Queensland adults
Co Authors - K. Mummery, R. Steele, C. Caperchione & G. Schofield

Wendy Ey, Women in Sport Award ($500)
Ms Maria Romiti, University of Ballarat
Barriers and facilitators towards a netball landing intervention program ("Down to Earth") among coaches of junior teams
Co Authors - P. White, N. Saunders, L. Otago, A. Donaldson & C. Finch

Queensland Academy of Sport Best Poster - Clinically Relevant Conditions ($500)
Ms Verona du Toit, University of Western Sydney
How effective are orthoses in the treatment of exertional medial shin pain?
Co Authors - M. Smith & B. Vicenzino

Journal of Science and Medicine in Sport Best Poster - Health Promotion ($500)
Miss Victoria Archbold, Leeds Metropolitan University
"I wish I was normal": the psycho-social effect of adolescents living with type 1 diabetes
Co Author - E. Webster

Best Poster - Injury Prevention ($500)
Ms Lauren Petrass, University of Ballarat
The role of child supervision as a risk or protective factor for childhood injury in active play
Co Authors - J. Blitvich & C. Finch

Best Poster - Performance Enhancement and Basic Science ($500)
Mr Amin Ahmadi, Griffith University & Queensland Academy of Sport
Deriving upper arm rotation from Vicon to enhance the first serve in tennis
Co Authors - D. Rowlands & D. James

Some winners of the Australian Sports Medicine Federation Fellows' Awards 2008 from left to right Maria Romiti, Natalie Collins, James Gaida, Dara Twomey, Simon Dannapfel, Rebecca Dennis, Dennis Taaffe, Nicola Burton & Stephan Riek

Letter to the Conference from a delegate that has attended 35 of the past 40 conferences.

Dear Gary,

I would like to congratulate you and your staff, all the various levels of organisation and particularly the Scientific Committee, Wendy Brown, Anita Green, and Jill Cook for hosting a marvellous conference – the ACSMS 08 at Hamilton Island last weekend.

You asked what I thought may have contributed to the overall enjoyment and success of the conference. My observations can only ever be a personal perspective from a long-term physiotherapy clinician committed to maintaining interest and staying at the cutting edge of this field. Basically, the bottom line to me, the worth of any conference relates to the clinical and practical gems I can take from the speakers and add to my special box of jewels. Every speaker gave me a jewel – some many.

I believe the sessions I attended were all of a very high quality and relevant to hands-on application. I think the groupings were useful for each session. I didn't miss one session.

The social content and net-working opportunities were as effective as any conference I'd ever been to. Perhaps the venue and dinner/meeting locations had something to do with this – everybody was within a hands-throw from everybody else.

Certainly the destination, hotel and facilities were all marvelous, and conductive to relaxation which allowed delegates to focus on the proceedings.

Overall, I would have to rate the conference one of the most enjoyable I've been to – the Gala Dinner was particularly fun. So, once again, many thanks for your management.

Look forward to seeing you again – certainly in Brisbane for the '09 conference, if not before.

Best Wishes,

Peter Dornan

Getting a CleanEdge: A partnership approach to prevent doping in youth

Young athletes and those responsible for their wellbeing can now wise up to the dangers of performance and image enhancing drugs by logging onto Sports Medicine Australia's new anti-doping website, CleanEdge, www.cleanedge.com.au.

An initiative of Sports Medicine Australia Victorian Branch supported by the Victorian Government, CleanEdge provides relevant and credible anti-doping education for those involved in and who administer community sport.

The website acts as an educational resource and information hub bringing together some of the best national and international resources. The website also contains new information that explores healthy ways to enhance performance, the facts about, and the consequences of, doping in sport in a variety of mediums. It includes nutrition and training tips, as well as suggestions for key sport stakeholders to help young athletes maintain a positive involvement in sport and recreation.

"By learning how to improve performance naturally through nutrition, training and preparation, both physically and mentally, sports participants will avoid the dangers associated with doping and achieve a healthy outlook on how to approach sport and physical activity," said Sports Medicine Australia Victorian Branch President, Dr Bolzonello.

The CleanEdge website can be used:

- By all involved with young athletes to give advice
- By athletes themselves
- To encourage healthy practices
- To learn about drugs in sport
- To learn about how to get an edge in sport

- With coaches or sporting clubs
- With teammates
- With parents or children
- In a classroom
- In conjunction with other anti doping resources and activities

Some highlights of the website are:

- Video interviews of elite athletes providing anti-doping messages to aspiring athletes. These include such athletes as Joanne Fox – water polo, Kathryn Mitchell – javelin, Kate Quigley – softball and Janne Errington Smith – wheelchair basketball.
- Video information and advice from sporting professionals including sports dietitians, physiotherapists, doctors, exercise physiologists and psychologists.
- An 'Education Kit' with a range of different activities about performance and image enhancing drugs, and improving sporting performance. Activities can be run as a one-off or as part of a series – dependant on what works with your setting.

Through providing doping information to all those involved in sport, it is hoped that the message of approaching sport 'cleanly' is adopted by all athletes in the aim that safer, cleaner, fairer and healthier sporting environments can be created.

To visit CleanEdge go to www.cleanedge.com.au. For more information phone 03 9674 8777 or email cleanedge@vic.sma.org.au

Sports Medicine Australia Victorian Branch would love to hear SMA members' thoughts on this new initiative. Visit www.cleanedge.com.au to submit comments.

Therapeutic Joint and Soft-tissue Injections

By Dr Justin Paoloni

The Medicare Benefits Schedule (MBS) is compiled and organised by the Australian government. This document outlines the indications and use of medical procedures for which the patient can claim reimbursement from the government. The indications are generally clearly defined, and one such item number is specifically for "injection into joint or other synovial cavity" (Item number 50124). This definition covers some therapeutic injections given by medical practitioners such as: joint injections, subacromial injection, Trochanteric bursal injection, prepatellar bursal injection, olecranon bursal injection, and retrocalcaneal or retroAchilles bursal injection. It could also easily be justified that this item number also covers injections for Morton's neuroma and the associated intermetatarsal bursa, and injections for de Quervain's tenosynovitis, tibialis posterior tenosynovitis, or trigger finger as the tendon sheaths have a synovial lining. However, there are many commonly used therapeutic soft-tissue injections, with appropriate evidence of efficacy, which are not covered by this definition. These injections give no patient rebate under the MBS.

It is my strong belief that the scope of therapeutic injections covered under this MBS item needs to be broadened, or a new item number introduced, to more effectively reimburse patients for clinically indicated and evidence based injection treatments [1]. As this definition currently stands, there is no patient rebate available for soft-tissue injections to treat tendon injury, muscle injury, injury to ligament or fascia, or nerve entrapments.

Here we will briefly discuss different soft-tissue injections and their evidence of efficacy (see Box 1 for levels of evidence)[2].

Tendon Injury

Tendon injury includes a spectrum of injury such as degenerative tendon injury and partial tendon tears. Therapeutic injections are commonly used to treat tendon injuries and can be an integral part of the management of these chronic conditions, especially where moderate to severe pain or disability is a feature.

There is level 1 evidence that corticosteroid injections decrease elbow pain and increase function, including grip strength, when used as a treatment for injury to the extensor carpi radialis brevis (ECRB) tendon in lateral epicondylosis [3-4]. Other therapeutic injections used to treat lateral epicondylosis, and having evidence of efficacy in reducing pain, include: autologous blood injections (level 2) [5], polidocinol sclerotherapy injections (level 2) [6], and botulinum toxin injections (level 2) [7]. There is level 3-2 evidence that corticosteroid injections decrease elbow pain as a treatment for flexor/ pronator tendon injury (medial epicondylosis) [8].

Achilles tendon injury and patellar tendinopathy are extremely common musculoskeletal conditions that often require therapeutic injections as part of their management. There is level 2 evidence of decreased pain with corticosteroid injection in patella tendinopathy [9] and Achilles tendinopathy [9-10], and for decreased pain with polidocinol injection sclerotherapy in patella tendinopathy [11] and Achilles tendinopathy [12].

Injury to Ligament and Fascia

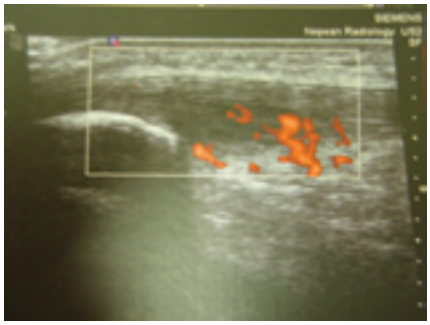
Medial collateral ligament (MCL) injury in the knee is common and may be recalcitrant to treatment, especially where proximal attachment calcification is noted (Pelligrini-Stieda lesion). Corticosteroid injection is the recommended treatment for this condition despite only level 4 evidence for treatment effect of decreasing pain and increasing function [13].

Plantar fasciitis is another common recalcitrant musculoskeletal condition, and corticosteroid injection is often required as part of treatment. There is level 1 evidence for decreased pain with this treatment [14-15].

Lumbar back pain, including injury to the iliolumbar ligament, is prevalent in the general community and there is level 2 evidence of efficacy of prolotherapy or normal saline injections reducing pain and disability [16-17].

Nerve Entrapments

One of the mainstays of therapy in the treatment of nerve entrapments is the use of corticosteroid injections to decrease soft-tissue swelling. There have level 1 evidence of treatment effect in carpal tunnel syndrome [18-19], and level 3/ level 4 evidence of effect in suprascapular nerve entrapment in the shoulder[20], radial tunnel syndrome (posterior interosseus nerve entrapment in the forearm)[21], and meralgia paresthetica (entrapment of the lateral femoral cutaneous nerve of the thigh as it passes through the inguinal fascia in the groin)[22].



Pseudoarthroses

A pseudoarthrosis generally refers to the fibrous or cartilaginous union between accessory bones and the adjacent larger bone (that often gives the accessory bone its name). These tend to cause symptoms in adolescents, and corticosteroid injections may be required to treat pain. There is level 2 evidence of efficacy in treating pain and decreasing posterior ankle impingement with symptomatic os trigonum [23], and level 3/ level 4 evidence of efficacy in treating os naviculare (also called os tibiale externum)[24], and in os acromiale[25].

These examples of commonly used, clinically appropriate, and evidence based soft-tissue injections in sports medicine are not covered by the MBS under the existing item numbers. I would suggest a few possible options (with option 3 being by preferred one):

Item number 50124 be retained for injections into joint and synovial cavities, and a new item number is added to the MBS encompassing therapeutic injections to treat tendon injury, muscle injury, ligament injury, fascial injury, and psudoarthroses.

Item number 50124 is expanded to adequately cover these therapeutic injections (by listing each injection and its treatment specifically)

Item number 50124 has an expanded descriptor to include not just "injection into joint or other synovial cavity" but also "therapeutic injections to treat tendon injury, muscle injury, ligament injury, fascial injury, and psudoarthroses."

Guided Injections

Additionally, the use of accurate guidance for therapeutic injections is gaining in popularity and this would include modalities such as ultrasound, Doppler ultrasound, and muscle electrostimulation. This may be preferable for small joint injections, soft-tissue injections into deeper tissues, or when using therapeutic agents where accurate delivery is essential to limit side-effects (polidocinol sclerosant injections in tendon, or Botulinum toxin injections in tendon injury). Besides these examples, the majority of injections can be safely and effectively delivered using palpation guidance alone.

A separate item number, and greater rebate, may be appropriate for these procedures which would compensate for the increased complexity and risk of the therapeutic injection, and equipment requirements. It may be appropriate to limit these guided injections and item numbers to appropriately training medical specialists.

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Box 1

Evidence Levels by Study Design[2]

Level 1:	Systematic review of randomised control trials (RCTs)
Level 2:	At least one properly designed RCT
Level 3-1:	Well designed pseudorandomised controlled trials
Level 3-2:	Comparative studies (or reviews of such studies) without concurrent controls
	Cohort studies
	Case control studies
Level 3-3:	Comparative studies with historical control
Level 4 :	Case series

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Postoperative management of athletic ankle injury

By Stuart Imer

Rehabilitation of an athlete after ankle surgery provides many challenges for the physiotherapist. This patient population is a very rewarding one to work with, as only the most severe cases will progress on to surgical management. Therefore the patient population is skewed to the most challenging cases, by their very failure at conservative measures.

There are those cases for which surgery is obviously unavoidable, if restoration of even non-athletic activities of daily living is to occur. Then there are the failed conservatively managed injuries that end up at surgery. Particularly with cases where larger surgery is involved for significant traumas, the role of the therapist in helping restore the athlete's function often shifts to ways of compensating for less than ideal physiological parameters. These cases are ultimately most rewarding as they are also the most difficult to treat.

Salient differences with respect to ankle injuries include the high prevalence of ankle injury, as well as anatomical and functional differences. Compared to the knee for example the weight-bearing surfaces are smaller, and the weight-bearing forces larger. The static restraints to instability are multi-arthrodial, their role applied across ankle and subtalar joints, and largely influenced by the other hindfoot joints. The ankle is also influenced greatly by the complex demands of the foot in adapting to surface variations, and the opposing goal of being a stable, rigid lever for effective propulsion.

Ankle instability

The surgical procedure of choice in restoring lateral ligament complex stability to the ankle is an anatomical repair, like the Brostrom procedure. There is no donor site morbidity that was such a problem in the complicated old-style reconstructions. These cases will be managed with backslab casting for two weeks (there are even some surgeons applying aircast braces in the operating suite, without a backslab at all) then progress on to sports ankle bracing at two weeks. I like the ASO ankle brace. This allows early range and strength work. I progress the patient on to partial weight bearing at two weeks then full weight bearing at four weeks. Patients can generally start running at six weeks with a full return to twisting sports at three months, or even earlier if physio resources are abundant, as with professional athletes.

Proprioceptive drills should be targeted to the sporting and daily needs of the athlete. The therapist should keep in mind the platform that the athlete will be working on. A table tennis player will need different drills to a surfer or mountain biker, for example. Tailor your drills accordingly, and be inventive. Use of moving platforms (e.g. scooter, skateboard or even rollerblades) can have your adventurous patients enjoying their late-stage rehab. Walking balance beam or fence posts or even slack chain can challenge others at late stage. Sure, don't forget theraband kicks, the balance disc or rockerboard; just don't finish your patients' rehab with only these devices if they are athletic.

Ankle impingement

Surgical treatment is usually best done through the arthroscope. Remember these patients are usually post-instability or compression injury, and that they probably have an aggressive healing tendency, which promotes scar tissue formation, which creates impingement. Hence they may not be unstable as they have scarred up nicely and usually too well. These patients will also tend to lay down scar after surgery, so a minimally invasive procedure is the best bet. Some posterior impingement including os trigonum excision can be dealt with by posterior ankle arthroscopy, but the vast majority of cases will be anterior. Intramuscular injection of corticosteroid at the time of surgery may afford some protection to overt inflammation progressing on to arthrofibrosis. Also postoperative intra-articular steroid can be helpful as well as hydradilitation in recalcitrant cases. Recently collected data in our clinic suggest that ankles will remain swollen for three to four months post-arthroscopy, much longer than the accepted six weeks.

It is critical that physio is part of the solution and not the problem in the rehab of these scar-prone patients. Endless compression through abuse and mistiming of lunge-type stretching will guarantee extra synovitis in the anterior ankle and create fibrosis and stiffness. Too often patients report they have been 'banging on regardless' with their lunge stretches in a forlorn attempt to push into range, even sometimes at the request of their physio! The net effect after a stretching session should have the patient feeling more flexible and not more painful. Try more traction-type stretches, sustained linear glides in non or minimal weight-bearing situations, cycling and pool work to help these cases. Full weight-bearing lunge is best left until after six weeks in a lot of these cases.

I have a zero tolerance policy for patients wearing thongs, bare feet or the currently fashionable flat or negative heel street shoes until six weeks as well. Runners (with a small heel lift if required) are the footwear of choice or any shoe with a positive heel pitch so long as the heel is broad and stable. Watch out for your young female patients who claim to only wear a small heel. You may need to make sure you are both on the same page with what constitutes 'small'.

With posterior ankle arthroscopy, it is vital to keep FHL gliding gently initially, and then progress on to combined dorsiflexion of toes and lunge stretches. Posterior ankle scopes take about double the recovery time in contrast to anterior arthroscopy, mostly because of the difficult access to the posterior joint and proximity of neurovasculature and long flexor tendons. While a talar dome lesion debridement may be back to match play at two months through an anterior approach, it could be four months to rehab the same lesion on the posterior talar dome treated through a posterior ankle arthroscopy.

Foot type

Assessment of the patient's foot type will give you some helpful insight into their likely issues with rehab. It is common to see the rigid high arch foot sustain multiple ankle lateral ligament traumas and to require reconstruction. It is common for these patients to be at increased risk of re-injury post-reconstruction as they commonly have a plantarflexed 1st ray which predisposes to lateral structure stretching. You can continue to brace and tape these athletes, which is a good idea, but the risk can be reduced as much by lateral forefoot posting, which reduces the tendency of the foot to pull the ankle into varus. It is also likely that this same foot type will have difficulty restoring dorsiflexion as they commonly have an equinus tightness as well. High rigid arches and tight calves go hand in hand. Some weeks I can spend 50% of my work hours trying to mobilise stiff ankles into dorsiflexion or advising patients on techniques to stretch this at home or in the gym.

Conversely, the flat mobile foot type may be more prone to reduced propulsive power as it struggles to lock into an effective rigid lever. These types of patients may be prone to overload of the subtalar joint complex and sinus tarsi syndrome. They may progress from medial or deltoid ligament injury to a cascade of spring ligament and tibialis posterior tendinopathy.

Footwear and orthotics

It is not unusual for physios to 'handball' any foot mechanical dysfunction to the podiatrist. It certainly is invaluable to have input from a skilled podiatrist in difficult mechanical dysfunction of the foot and with manufacturing of custom-made orthotics. There are a lot of simple mechanical interventions that physios should consider. I am not talking just about issuing ready made, off-the-shelf orthotics. Footwear prescription is the starting point, and it should be appropriate for the patient's foot type, pathology, daily as well as recreational and sporting needs. Also it can be valuable to intervene with athletes who participate in barefoot sports for their daily shoe-wear needs, as often the problem in a lot of overuse pathology is the total cumulative load on the structure. A gymnast with sinus tarsi syndrome for example may benefit as much from supportive shoes and orthotics used for daily activities, as from low Dye taping for training.

With the ready availability of off-the-shelf orthotics, physios are now more than ever issuing devices to control their patients' foot mechanics. It should be remembered there needs to be a mechanical deficit to be treated and a relevant history of pathology to indicate issuing any device. Sometimes the device fitted can be as simple as a heel lift or forefoot wedge. These can often be fixed in the shoe or to the existing foot bed with no need to issue expensive orthotics.

Summary

Make your rehab for the post-surgical ankle patient timely, clever, challenging and stimulating to ensure compliance. Keep thinking about your athlete's needs for their sport, but also the total volume of activity in a day. Back them off and instil in them the need to avoid aggravating the joint if they are consistently overdoing things. Swelling and fibrosis are the main concerns which can limit end-stage function, so be vigilant in monitoring these and intervene when required.

Stuart Imer is Principal Physiotherapist at The Park Clinic, a Melbourne orthopeadic surgery clinic and Physiotherapist to the Australian Cross Country Ski Team.

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Best Paper Awards

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Cricket Australia Injury Report 2008

By John Orchard, Trefor James, Alex Kountouris, Marc Portus

Summary

This report analyses injuries occurring prospectively in Australian cricket at the state and national levels over an entire decade (concluding in season 2007-08). An additional emphasis of this report is to document any changes to the injury profile as a result of the growth of Twenty/20 cricket and to predict future changes to the injury profile based on the likely increase in Twenty/20 cricket.

The most notable findings of this year's report are:

1 There was an increase in both injury incidence and prevalence in 2007/08. This relates mainly to an increased number of days of play in domestic cricket with the expansion of the Twenty/20 competition.

2 Because of the short match duration, Twenty/20 cricket has led to an increase in match injury incidence expressed as injuries per 10000 hours of play.

3 Expressed however as injuries per days of play, there is a trend that Twenty/20 cricket is leading to reduced numbers of bowling injuries, but increased number of injuries batting and fielding, compared to other forms of cricket.

4 The one injury category in particular which appeared to increase in 2007-08 was hamstring and thigh strains, which reached an all-decade high of 4.4 injuries per team per season.

Injury incidence, the number of injuries occurring per match or per season, stayed at a fairly constant level over the ten year survey period, but with incidence rates that have peaked in 2007-08 (20.3 injuries per squad per season and 49.2 injuries per 10000 player hours). Injury prevalence, the percentage of players missing through injury, has gradually increased over the ten year period in line with increases in scheduling. The average injury prevalence in 2007-08 was 11.3% of players missing through injury, although this was not quite as high as the peak figure of 11.4% recorded in 2003-04.

Whether Twenty/20 cricket will have a positive or negative effect on injury rates in cricket depends on the changes that are made to the schedule as more Twenty/20 cricket is introduced. If there is no reduction in first class cricket and hence the schedule simply becomes more cluttered, there will no doubt be an increase in injury rates. A reduction in first class cricket may however result in a 'narrowing of the gap' between the risk of injury for pace bowlers and other positions. That is, fast bowlers are less likely to be injured in Twenty/20 cricket due to reduced bowling workloads, whereas batsmen and fieldsmen may be more likely to be injured due to the increased intensity of general play.

Introduction

Cricket is one of the world's major team sports and is played at the elite level according to a dynamic international calendar. Injuries in cricket at the elite level are quite common with fast bowlers the players most susceptible to missing time through injury[1-8]. Much of the risk of injury for fast bowlers relates to overuse, with some evidence that at amateur level, where workloads are far smaller, cricket is a relatively safe sport[9]. It is accepted by most researchers that ongoing injury surveillance is the fundamental pillar of successful injury prevention[10]. Cricket researchers tend to agree that we should aim to follow the Van Mechelen paradigm using injury surveillance as the basis for risk factor and interventional studies which can ultimately lead to injury prevention[7 11].

In 2005, cricket researchers published the first ever consensus international injury definitions for a sport[12-15], an innovation was soon followed by football (soccer)[16] and rugby union[17]. Even though this

consensus was developed quite recently in 2004-2005, Twenty-20 cricket was only in its embryonic stages. Australia only played its first International Twenty-20 match in season 2004-2005 and it was not until the following season that the first domestic competition started.

Bowling workload as a risk factor for overuse injury in cricket has been previously analysed[18,19]. These studies have generally looked at overall bowling loads (expressed in terms of deliveries per week or sessions bowled per week) and subsequent risk of bowling injury, rather than acute workloads from a single match. There is a relationship between the overall bowler workload (matches and training) and risk of bowling injury in both adult[19] and junior[18] cricket. It appears from this work (although it is not clearly established) that number of bowling sessions per week (whether they are training or match) correlates best with injury risk.

The recent expansion of Twenty/20 cricket has already changed the nature of the cricket calendar and its predicted further expansion is likely to change it further still. There are already more days of scheduled match play in domestic cricket with the expansion of the Twenty/20 competition. The workloads of the future for bowlers may be a greater number of days of competition but, if some of the traditional calendar is replaced by Twenty/20 matches, a workload profile of higher number of short bursts but a decreased number of overall overs bowled.

Methods

Cricket Australia conducts an annual ongoing injury survey recording injuries in contracted first class players. Methods for this survey have been described previously[20]. The methods used for Cricket Australia injury surveillance are non-interventional, conform to the Code of Ethics of the World Medical Association (Declaration of Helsinki) and have been approved by the Cricket Australia Sports Science Sports Medicine Advisory Group.

The recommended methods of injury surveillance internationally were published in detail in 2005[12-15]. The definitions are available free in full text format on the web at:

http://www.injuryupdate.com.au/images/research/JSMScricketdefinitions.pdf

The definition of a cricket injury (or 'significant' injury for surveillance purposes) is:

Any injury or other medical condition that either:

(1) prevents a player from being fully available for selection in a major match; or

(2) during a major match, causes a player to be unable to bat, bowl or keep wicket when required by either the rules or the team's captain.

The major injury rates presented are injury incidence and injury prevalence:

- ***Injury incidence*** analyses the number of injuries occurring over a given time period.
- *Injury match incidence* considers only those injuries occurring during major matches.
- *Injury seasonal incidence* considers the number of defined injuries occurring per squad per season. This can take into account gradual onset injuries, training injuries and match injuries in the one measurement. A 'squad' is defined as 25 players and a 'season' is defined as 60 days of scheduled match play.

Injury prevalence considers the average number of *squad members* not available for selection through injury for each match divided by the total number of *squad members*. Injury prevalence is expressed as a *percentage*, representing the percentage of players missing through injury on average for that team for the season in question. It is calculated using the numerator of 'missed player games', with a denominator of number of games multiplied by squad members. Player movement monitoring essentially requires that all players are defined in each match as either: (1) playing cricket (2) not playing cricket due to injury or illness (3) not playing cricket for another reason (e.g. non-selection with no lower grade game available).

This report covers injuries from the following cricket seasons:

In order to promote consistency, the starting date for the Australian cricket year has been designated as the start of whichever series *commenced after* April 1st for every season under consideration (Table 1). The finishing date has been at the end of the latest finishing series which started in March each year.

The primary recorder of injuries has been the main team doctor at two states (Queensland, Victoria) and for the Australian team and the main team physiotherapist for four states (New South Wales, South Australia, Western Australia, Tasmania). Recorders have been encouraged to enter most injuries that have presented to medical staff into the database but to notify which ones qualified according to the survey definition (and by which criteria). The injury survey coordinator has kept records of all matches played by squad members (in a spreadsheet) and ensured that each state provided an explanation to the survey whenever one of their players was not selected, in order to keep the spreadsheet data accurate. Insurance forms completed by medical officers have also been cross-checked to ensure all insurance information was also entered as part of the survey. Media and website reports have been regularly checked by the injury survey coordinator as a way of prompting injury recorders to provide a diagnosis.

Table 1 - Dates of seasons covered by this survey

Year	Season	Dates (according to April-March cricket 'year')
10	2007-08	September 2007-March 2008
9	2006-07	September 2006-April 2007
8	2005-06	June 2005-April 2006
7	2004-05	May 2004-March 2005
6	2003-04	April 2003-March 2004
5	2002-03	June 2002-March 2003
4	2001-02	June 2001-April 2002
3	2000-01	April 2000-April 2001
2	1999-00	May 1999-March 2000
1	1998-99	October 1998-April 1999

Table 2 - Squad numbers per season

Squad	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Australia	31	30	32	30	28	31	28	30	31	28
New South Wales	30	32	30	35	31	28	27	37	40	35
Queensland	20	23	26	28	27	30	30	31	32	32
South Australia	31	23	23	27	32	22	30	26	27	30
Tasmania	21	20	27	28	26	24	22	27	32	29
Victoria	26	23	27	31	30	29	26	36	31	25
Western Australia	23	26	30	30	29	30	30	37	34	32

Some of the injury rates reported here for seasons prior to 2007-08 may vary slightly from those published in previous reports. If input errors were found or definitions of injury categories have been changed then the updated values for previous seasons are included in this report. Therefore this report reflects the most accurate data from past seasons and the values presented here supersede all previous publications.

In accordance with the recommended international formula[12-15], hours of player exposure in matches is calculated by multiplying the number of team days of exposure by 6.5 for the average number of players on the field and then multiplied by the number of designated hours in a day's play. For first class matches this is 6 hours per day and for one day matches this is 6.667 hours per day. This gives a designated exposure in terms of player hours which is used as the denominator for match incidence calculations. Player days per team per season are calculated by multiplying the size of the squads (for each match) by the number of days for matches. A very minor variation from the international definition recommendations was that an uncontracted player was considered in season 2005-06 to have become part of the squad if he was selected as 12th man in the team. This change was made in response to the rule in one day cricket for that season which allowed the 12th man to actively play as a substitute, a rule which was only used for this one particular season.

The methods used for Cricket Australia injury surveillance conform to the Code of Ethics of the World Medical Association (Declaration of Helsinki) and the latest National Health and Medical Research Council (NHMRC) guidelines for research. As injury surveillance is non-interventional and the methods preserve confidentiality of the players, it is characterised as 'low risk' (statement available at: http://www.nhmrc.gov.au/publications/synopses/_files/e72.pdf , accessed June 4, 2007).

Results

Injury exposure calculations

Table 2 lists the number of players in each squad per season, whilst Table 3 lists the number of matches per team per season. Since 1998-99 the Australian team has contracted 25 players annually prior to the start of any winter tours (i.e. during late May or early June). The Australian squad for each subsequent season has been greater than 25 players, as it includes (from the date of their first match until the new round of contracts) any other player who tours with or plays in the Australian team. State teams can contract up to 20 other players on regular contracts (outside their Australian contracted players) and up to 5 players on 'rookie' contracts. As with the Australian team, any other player who plays with the team in a major match during the season is designated as a squad member from that time on.

The format of the Sheffield Shield has consistently been that each of six teams plays ten matches each, one home and one away against each of the other teams (60 team matches), followed by a final (2 team matches) at the end of the season. The matches are all scheduled for 4 days, with the final being scheduled for 5 days. Since 2000-01, the domestic limited overs (one day) competition has followed the same home & away format as the Sheffield Shield. The domestic limited over series (currently Ford Ranger and formerly both ING and Mercantile Mutual Cup) format during 1998-99 and 1999-2000 seasons was a single round of matches, with a team from the ACT in the competition (although not included in injury surveillance). The domestic Twenty/20 competition (currently KFC Big Bash) commenced in season 2005-06 as a limited round of matches but has been expanded in each subsequent season.

As seen from Table 4, in limited overs (Ford Ranger Cup, One Day International (ODI) and Twenty/20) matches, the number of team days is generally the same as the number of team matches scheduled, with the exception of washed out games which count as zero days of exposure.

As per the international definitions[12-15], hours of player exposure in matches is calculated by multiplying the number of team days of exposure (Table 4) by 6.5 for the average number of players on the field and then multiplied by the number of designated hours in a day's play. For first class matches this is 6 hours per day and for one day matches this is 6.667 hours per day. This gives a designated exposure in terms of player hours (Table 5) which is used as the denominator for match incidence calculations. Overall exposure (in terms of match hours and overs bowled) has generally risen over the period of the survey, although the highest level of workloads were recorded in seasons 2003-04 and 2005-06. Exposure for the Australian team has been slightly reduced in the last two years due to a reduced number of Test matches. It is likely that for the two years commencing 2008-09, if the full Test schedule is undertaken, total exposure will again increase. However, the international calendar is possibly about to undergo changes due to the ever-increasing number of Twenty/20 tournaments. As has been previously discussed, increased match exposure tends to increase injury prevalence, as when matches are scheduled closer together there is less recovery time between games.

Table 3 - Team matches under survey from 1998-99 to 2007-08

Team matches played	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Domestic Twenty/20								14	26	32
Domestic One Day	42	42	62	62	62	62	62	62	62	62
Domestic First Class	62	62	62	62	62	62	62	62	62	62
International Twenty/20							1	3	1	9
One Day International	23	34	22	22	32	32	26	35	36	20
Test match	12	13	8	14	8	15	14	17	5	6
All matches	139	151	154	160	164	171	165	193	192	191

Table 4 – Team days played under survey 1998-99 to 2007-08

Competition	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Domestic Twenty/20								14	24	30
Domestic one day	42	40	62	62	62	62	60	60	62	60
First class domestic	222	232	228	228	220	242	234	228	232	236
International Twenty/20							1	3	1	11
One day international	23	34	22	21	32	32	24	35	36	20
Test cricket	53	53	33	61	32	69	58	78	22	28
Total	340	359	345	372	346	405	377	418	377	385

Table 5 – Designated player hours of exposure in matches each season

Competition	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Domestic Twenty/20								242	415	519
Domestic one day	1819	1732	2685	2685	2685	2685	2598	2598	2685	2598
First class domestic	8658	9048	8892	8892	8580	9438	9126	8892	9048	9204
International Twenty/20							17	52	17	156
One day international	996	1472	953	909	1386	1386	1039	1515	1559	866
Test cricket	2067	2067	1287	2379	1248	2691	2262	3042	858	1092
TOTAL	13539	14319	13816	14865	13898	16199	15042	16342	14582	14435

Table 6 – Overs bowled in matches each season

Match type	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Domestic Twenty/20								241	470	570
Domestic one day	1874	1858	2690	2835	2697	2883	2729	2814	2877	2606
First class domestic	9945	9729	9837	9833	9224	10311	9871	9645	9967	9713
International Twenty/20							20	58	20	171
One day international	1061	1486	1052	980	1377	1417	1057	1577	1488	805
Test cricket	1910	1882	1347	2243	1271	2802	2159	2756	890	1136
Total	14791	14955	14926	15891	14569	17413	15835	17090	15711	15001

Table 7 – Player days of exposure available (for prevalence calculations)[1]

Team	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Domestic Twenty/20								441	739	947
Domestic one day	990	916	1495	1739	1675	1651	1564	1842	1911	1818
First class domestic	5160	5343	5586	6435	5936	6477	6157	7193	7265	7340
International Twenty/20							27	82	27	227
One day international	678	964	631	608	865	881	640	960	1056	536
Test cricket	1517	1444	947	1707	820	1906	1562	2095	572	790
Total	8345	8667	8659	10489	9296	10915	9950	12613	11570	11658

[1] Seasonal incidence calculations use almost identical exposure data except that for prevalence calculations, a player who joins the squad mid-season is not considered to be exposed to missing his first game through injury. This is because an uncontracted player can only be considered to have joined a squad mid-season by playing a game, hence he cannot miss this first game through injury.

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Table 6 shows that workload in terms of number of overs bowled has stayed fairly steady in first class domestic cricket over the past ten years, but has increased in domestic one day cricket since 2000-01. Twenty/20 cricket will probably not contribute substantially to overall bowling workload despite the new fixtures being introduced, although the number of days of cricket played will probably be increased.

Player days per team per season are calculated by multiplying the size of the squads (for each match) by the number of days for matches (Table 7). A very minor variation from the international definition recommendations is that an uncontracted player was considered to have become part of the squad if he was selected as 12th man in the team during season 2005-06 only. This change was made because of the rule present in one day cricket during season 2005-06 only which allowed the 12th man to play as a substitute.

Injury incidence

Injury incidence results are detailed in Tables 8-13. Injury match incidence is calculated in Table 8 using the total number of injuries (both new and recurrent) as the numerator and the number of player hours of exposure (Table 5) as the denominator.

Injury match incidence in the units of injuries per 10000 player hours is higher in one day matches than first class matches and then higher still in Twenty/20 cricket. Because first class matches are played over a much longer duration than limited overs matches (at both domestic and international level), they produce a higher number of injuries per match, even though the hourly rate is lower.

Table 10 reveals that the higher rate of match injury overall and bowling injury specifically relate to *home*, rather than away, ODI matches. Away ODIs have not led to nearly as high injury rates as home ODIs for reasons that are explored later in this report.

Table 11 analyses match injury incidence by a new unit, injuries per 1000 days of play. This unit was not recommended by the international definitions but enables a more direct comparison between Twenty/20 cricket and the other forms. From this, it can be seen that Domestic Twenty/20 matches have a lower bowling injury incidence than other forms of domestic cricket in terms of injuries per day of play, even though the incidence is comparable in terms of injuries per 1000 overs bowled. The international Twenty/20 figures follow a similar trend although are not yet as accurate due to the small number of

Table 8 - Injury match incidence (injuries/10000 player hours)

Match type	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	Aver.
Domestic Twenty/20								41.3	120.4	115.6	102.0
Domestic one day	55.0	34.6	48.4	22.3	37.2	67.0	42.3	65.4	48.4	57.7	48.0
First class domestic	32.3	24.3	22.5	45.0	24.5	23.3	24.1	14.6	28.7	40.2	28.0
International Twenty/20							0.0	192.7	0.0	321.1	247.7
One day international	80.3	61.1	52.5	33.0	72.2	57.7	67.4	19.8	51.3	46.2	53.8
Test cricket	24.2	62.9	23.3	29.4	24.0	44.6	8.8	23.0	23.3	36.6	30.5
All matches	**37.7**	**34.9**	**29.7**	**37.7**	**31.7**	**37.0**	**27.9**	**25.7**	**37.0**	**49.2**	**34.8**

Table 9 - Bowling match incidence (injuries/1000 overs bowled)

Match type	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	Aver.
Domestic Twenty/20								0.0	2.1	1.8	1.6
Domestic one day	3.2	2.2	3.7	1.1	1.9	2.1	1.5	1.1	1.4	2.7	2.0
First class domestic	1.9	0.9	0.9	1.5	1.5	0.9	1.0	0.2	1.1	2.2	1.2
International Twenty/20							0.0	0.0	0.0	5.8	3.7
One day international	2.8	2.0	1.0	0.0	1.5	0.7	1.9	0.6	2.0	0.0	1.3
Test cricket	1.0	3.2	2.2	1.8	2.4	2.5	0.0	0.7	1.1	0.0	1.5
All matches	**2.0**	**1.5**	**1.5**	**1.4**	**1.6**	**1.3**	**1.0**	**0.5**	**1.3**	**2.0**	**1.4**

10 – Home versus away bowling match incidence comparison for the Australian team (injuries/1000 overs bowled)

Match type	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	Total
Home one day internationals	3.6	4.4	1.6	0.0	3.2	0.0	4.3	0.0	4.3	0.0	2.1
Away one day internationals	2.0	1.0	0.0	0.0	0.0	1.1	0.0	1.1	1.0	0.0	0.7
Home test cricket	0.0	6.3	2.7	1.9	2.2	4.8	0.0	0.8	0.0	0.0	2.1
Away test cricket	1.8	0.0	1.6	1.7	2.8	0.0	0.0	0.6			0.9
All matches	**1.7**	**2.7**	**1.7**	**1.2**	**1.9**	**1.9**	**0.6**	**0.7**	**1.3**	**0.0**	**1.4**

Table 11 - Match incidence analysis by player days

Match type	Injury incidence (n /10000 player hours)	Injury incidence (n/1000 days of play)	Bowling injury incidence (n/1000 overs bowled)	Bowling injury incidence (n/1000 days of play)
Domestic 20/20	102.0	176.5	1.6	29.4
Domestic one day	48.0	208.0	2.0	90.9
First class domestic	28.0	109.0	1.2	52.1
International 20/20	247.7	428.6	3.7	71.4
One day international	53.8	233.0	1.3	57.3
Test cricket	30.5	119.1	1.5	57.5
All matches	**34.8**	**137.3**	**1.4**	**58.8**

Table 12 - Injury seasonal incidence by team (injuries/team/season)

Team	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Australia	17.7	15.5	18.0	15.5	22.2	18.3	14.8	16.2	26.2	25.0
New South Wales	14.2	11.7	16.3	18.5	9.2	19.9	5.8	8.9	15.0	9.2
Queensland	11.5	17.0	17.2	25.3	15.7	20.4	17.9	15.0	20.6	36.3
South Australia	24.3	13.5	23.1	17.6	17.9	20.3	9.7	17.3	12.7	17.5
Tasmania	17.7	13.9	18.4	16.9	20.5	13.2	19.7	21.7	14.8	12.5
Victoria	18.6	23.3	16.9	20.5	20.0	18.6	13.4	15.9	20.4	29.0
Western Australia	21.1	19.7	14.1	16.6	19.8	15.2	23.6	11.9	12.4	16.3
All teams	**18.0**	**16.2**	**17.5**	**18.3**	**17.8**	**18.1**	**15.0**	**15.1**	**17.4**	**20.3**

Table 13 - Injury seasonal incidence by body area & injury type

Injury type	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Fractured facial bones	0.0	0.3	0.2	0.3	0.0	0.1	0.2	0.2	0.1	0.1
Other head and facial injuries	0.2	0.0	0.0	1.0	0.2	0.1	0.2	0.1	0.3	0.3
Neck injuries	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.2	0.4	0.0
Shoulder tendon injuries	1.2	1.4	0.5	0.9	1.1	0.0	0.2	0.9	0.6	0.5
Other shoulder injuries	0.0	0.0	0.5	0.7	0.3	0.4	0.9	0.8	0.5	1.5
Arm/forearm fractures	0.4	0.3	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0
Other elbow/arm injuries	0.2	0.2	0.5	0.0	1.1	0.1	0.2	0.6	0.3	0.9
Wrist and hand fractures	1.1	0.7	1.7	1.7	1.1	1.0	1.2	0.8	0.5	1.3
Other wrist/hand injuries	0.5	0.7	0.5	0.1	0.6	0.7	1.2	0.4	0.5	0.4
Side and abdominal strains	1.6	1.0	2.1	1.8	0.5	1.1	1.4	0.6	1.7	1.7
Other trunk injuries	0.5	0.0	0.2	0.4	0.0	0.5	0.0	0.6	0.6	0.1
Lumbar stress fractures	0.2	0.5	0.5	0.7	1.4	0.8	0.2	0.5	1.0	0.3
Other lumbar injuries	1.8	1.0	1.4	0.9	1.9	1.9	1.1	1.7	1.0	1.6
Groin and hip injuries	2.0	0.7	1.0	0.9	2.2	2.2	0.8	1.2	1.6	1.1
Thigh and hamstring strains	3.2	1.6	2.6	2.6	1.9	2.9	2.6	1.3	2.1	4.4
Buttock and other thigh injuries	0.0	0.2	0.9	0.1	0.0	0.8	0.0	0.0	0.8	0.5
Knee cartilage injuries	0.7	0.9	1.5	1.4	0.6	0.4	0.9	1.8	0.9	0.5
Other knee injuries	1.6	1.4	0.9	0.6	0.3	0.4	0.0	0.6	0.4	0.3
Shin and foot stress fractures	0.2	0.2	0.3	0.3	0.8	0.3	0.6	0.1	0.5	0.5
Ankle and foot sprains	1.1	1.2	1.0	1.1	1.0	1.6	0.8	0.5	1.0	1.3
Other shin, foot and ankle injuries	0.9	1.2	0.5	2.0	1.6	1.8	1.8	0.6	1.4	1.3
Heat-related illness	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Medical illness	0.7	2.4	0.3	0.9	1.0	0.7	1.1	1.5	1.2	1.3
Total	**18.0**	**16.2**	**17.5**	**18.3**	**17.8**	**18.1**	**15.0**	**15.2**	**17.4**	**20.3**

International Twenty/20 matches that have been played to date.

Seasonal incidence (Table 12 and Table 13) is calculated by number of injuries multiplied by 1500 (for a squad of 25 players over 60 days), divided by the number of player days of exposure (Table 7).

Table 13 reveals that seasonal incidence by body part has generally been consistent over the past eight seasons. Some injury categories have fallen slightly in incidence in recent seasons including shoulder tendon injuries and wrist and hand fractures although most categories have stayed fairly constant.

Injury prevalence

Injury prevalence rates follow a similar pattern to injury incidence, although whereas incidence stayed constant over the past few seasons, prevalence has gradually increased. The disparity between the two can be attributed to the generally increased number of matches, with the 'average' injury artificially becoming more severe over recent years because there are more matches to miss (injury prevalence = injury incidence x average injury severity).

Injury prevalence rates (Tables 14-16) in season 2007-08 were slightly higher than the long-term average, which is an expected outcome given the steadily increasing amount of match exposure at domestic level. Although the Australian team had a prevalence rate that was higher in 2007-08 than some previous seasons, despite low exposure, this may somewhat reflect ageing of the squad.

Pace bowlers remain the position most susceptible to missing time through injury (Table 15). In season 2007-08, 18% of fast bowlers were missing (on average) through injury at any given time. It is pleasing to report that the early trend from Twenty/20 cricket that bowling injury risk may be lower (Table 11) will tend to redress this imbalance somewhat. It continues to be a priority to further research possible risk factors for pace bowlers in order to control their injury rates.

Injury prevalence by injury category (Table 16) revealed no outstanding trends for season 2007-08 other than an increase in time missed due to thigh and hamstring strains. This may possibly be related to an increased speed of movement in Twenty/20 cricket.

Chance plays a role in any injury and whenever there is a 'run' of a certain injury type in a short time period, it is worth investigating how much 'out of the ordinary' was the short-term increase. This can be done by comparing the expected number of injuries and the observed number of injuries, with statistical tests employed to determine the likelihood that chance was responsible for the observed increase. A calculation was made regarding the rate of significant muscle strains for the Australian team in the Twenty/20 World Cup and the rate was 6.7 times higher than expected (95% confidence intervals 1.7-26.5). Basically this is a much higher rate than normal which is unlikely to be fully explained by chance. Specific injury rates for Twenty/20 cricket are not well documented, due to the novelty of this form of the game. However the early data suggests that bowling injury risk is lower in Twenty/20 cricket but batting and fielding injury risk is higher. It is logical on the one hand that any injury related to bowling workload (such as perhaps stress fractures of the lumbar spine) may be substantially reduced by Twenty/20 cricket, as bowlers are limited to 4 overs each per match. However,

any injury which is linked to batting and fielding intensity may potentially be increased, as the number of runs scored per ball faced is substantially higher than in other forms of the game. It is known that risk of past injury increases the risk of future injury to the hamstrings[21]. It has also been well documented in the sport of Australian football, in particular, that increasing player age is a risk factor for hamstring injury[21].

Past history of lumbar spine injury, particularly disc injury or stress fracture, is postulated as a risk factor for hamstring strain[22]. Aeroplane travel represents a possible but unproven risk for hamstring injury. It is suspected that reduced ratios of hamstring to quadriceps strength represents a risk for hamstring strain injury (H:Q ratio) and that H:Q ratio may be a product of specific training[23]. For example, an overemphasis on quadriceps strengthening (leg press exercises) may lead to relative hamstring weakness and perhaps greater susceptibility. For this

Table 14 - Comparison of injury prevalence between teams

	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Australia	8.6%	8.8%	11.1%	6.7%	6.8%	11.7%	5.7%	7.7%	10.0%	10.9%
New South Wales	5.0%	5.6%	5.9%	5.4%	6.7%	15.1%	3.1%	5.7%	5.8%	6.2%
Queensland	3.6%	5.2%	8.8%	16.6%	8.8%	14.5%	15.1%	7.3%	12.3%	18.5%
South Australia	9.0%	9.8%	12.1%	14.5%	9.4%	10.1%	2.1%	9.0%	7.9%	4.9%
Tasmania	7.1%	6.1%	6.5%	8.8%	8.7%	3.3%	12.1%	21.9%	9.4%	9.6%
Victoria	8.0%	5.6%	14.3%	12.6%	9.9%	13.7%	7.5%	11.7%	18.1%	19.7%
Western Australia	6.9%	9.3%	7.2%	6.9%	10.5%	9.1%	11.9%	9.2%	9.6%	11.0%
Average	**7.2%**	**7.5%**	**9.5%**	**9.7%**	**8.6%**	**11.4%**	**8.1%**	**9.7%**	**10.3%**	**11.3%**

Table 15 – Injury prevalence by player position

Player type	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Batsman	3.9%	3.4%	5.2%	4.7%	3.0%	7.2%	9.8%	6.3%	5.5%	8.5%
Keeper	2.8%	1.5%	0.9%	0.6%	0.9%	3.7%	3.2%	2.9%	0.5%	2.0%
Pace Bowler	11.5%	14.0%	15.0%	19.4%	16.6%	18.0%	9.3%	14.4%	18.6%	18.0%
Spinner	4.9%	1.4%	10.0%	1.1%	3.7%	6.9%	4.2%	8.8%	4.1%	10.6%
Total	**7.2%**	**7.5%**	**9.5%**	**9.7%**	**8.6%**	**11.4%**	**8.1%**	**9.7%**	**10.3%**	**11.3%**

Table 16 – Comparison of injury prevalence by body area

Body region	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Fractured facial bones	0.0%	0.1%	0.2%	0.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
Other head and facial injuries	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Neck injuries	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Shoulder tendon injuries	0.6%	0.4%	0.8%	1.4%	0.7%	0.1%	0.1%	0.8%	0.7%	0.4%
Other shoulder injuries	0.4%	0.0%	0.3%	0.6%	0.2%	0.4%	0.8%	1.0%	0.5%	1.1%
Arm/forearm fractures	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%
Other elbow/arm injuries	0.0%	0.0%	0.7%	0.0%	0.6%	0.0%	0.1%	0.2%	0.0%	0.4%
Wrist and hand fractures	0.1%	0.1%	0.9%	0.9%	0.3%	1.0%	0.7%	0.6%	0.2%	0.5%
Other wrist/hand injuries	0.2%	0.3%	0.1%	0.0%	0.2%	0.1%	0.7%	0.1%	0.1%	0.6%
Side and abdominal strains	0.4%	0.4%	0.4%	0.7%	0.2%	0.7%	0.8%	0.3%	0.6%	0.8%
Other trunk injuries	0.4%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.3%	0.1%	0.0%
Lumbar stress fractures	0.1%	0.8%	0.6%	1.1%	1.7%	2.4%	0.2%	0.9%	1.6%	0.8%
Other lumbar injuries	0.7%	1.3%	0.9%	0.3%	0.6%	0.7%	1.0%	1.1%	0.6%	0.5%
Groin and hip injuries	1.1%	0.1%	0.3%	0.8%	0.6%	0.9%	0.3%	0.6%	1.0%	0.7%
Thigh and hamstring strains	0.9%	0.7%	0.6%	0.7%	0.8%	0.7%	0.7%	0.3%	1.1%	1.6%
Buttock and other thigh injuries	0.0%	0.0%	0.2%	0.0%	0.0%	0.3%	0.0%	0.0%	0.8%	0.1%
Knee cartilage injuries	0.4%	0.6%	1.1%	1.2%	1.2%	0.4%	0.5%	1.7%	1.0%	0.6%
Other knee injuries	0.9%	0.4%	1.4%	0.1%	0.1%	0.2%	0.0%	0.6%	0.3%	0.4%
Shin and foot stress fractures	0.0%	0.1%	0.2%	0.2%	0.5%	0.0%	0.5%	0.2%	0.4%	0.4%
Ankle and foot sprains	0.4%	0.4%	0.5%	0.5%	0.3%	1.4%	0.2%	0.5%	0.6%	1.6%
Other shin, foot and ankle injuries	0.1%	1.1%	0.1%	0.8%	0.5%	1.3%	0.6%	0.2%	0.4%	0.5%
Heat-related illness	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Medical illness	0.2%	0.6%	0.1%	0.2%	0.2%	0.5%	0.6%	0.3%	0.2%	0.3%
Total	**7.2%**	**7.5%**	**9.5%**	**9.7%**	**8.6%**	**11.4%**	**8.1%**	**9.7%**	**10.3%**	**11.3%**

Table 17 - Key indicators for preventable non-bowling injuries over nine seasons

Mechanism	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Sliding into fence	2	2	1	0	0	0	0	0	0	0
Playing football	1	1	0	3	0	0	0	2	1	0

reason, early season hamstring injury rates are often higher because training has been more 'general' (e.g. building up aerobic and strength base in muscles) and not specific for cricket match preparation[24,25].

'Preventable' non-bowling injuries

It is again worth reporting that injuries from fielders sliding into the fence appear to have subsided, with none of these injuries having qualified as a survey injury since 2000-01. There are some occasional minor injuries suffered from collision with the rope itself and with the fence if it is an inadequate distance from the rope. For the most part, it is apparent that the new rules are working well. The moving in of the boundary has changed the nature of the game, in that games are higher and faster scoring because of the increased number of boundaries. However, most cricket commentators feel that these changes have been for the better.

In 2006-07 one player suffered a serious knee injury (ACL) from playing touch football at training, continuing the tradition of occasional injuries from these activities. Fortunately no survey injuries occurred from football activities in 2007-08. Whilst football cross-training may always have some part in relieving the boredom from routine other drills, it is constantly worth mentioning that in cricketers this appears to be a high risk activity. One piece of advice worth considering is the use of lower traction boots during these activities (e.g. running shoes rather than spikes when playing on grass). Running shoes will increase the risk of slippage-type injuries but decrease the risk of traction-type injuries. The slipping injuries tend to fortunately be less severe, with the dreaded ACL being included in the latter category.

Discussion & Recommendations

Injury definition

These injury definitions have been criticised on the basis that they are not a comprehensive survey of all incidences of 'tissue damage' sustained by players[26 27]. However, the major aim when creating definitions was to set a standard that would be followed equally in all countries surveying cricket injuries[28 29]. The fact that there has been very slow recent progress in getting an international register of cricket injuries suggests that the choosing the path of lower difficulty was a sensible decision. There is still plenty of scope for the ICC to attempt to coordinate a 'world' program of injury surveillance in elite

cricket. This may become a priority once the international calendar stabilises.

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Sports Medicine Australia (SMA) produces a range of publications and resources for professional members and the wider community.

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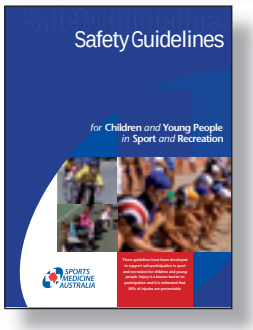

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- *Safety Guidelines for children and young people in sport and recreation*
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8.30am - 5.00pm
Topics include:

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- Fuels for exercise
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- Performance nutrition
- Pre-exercise and recovery nutrition
- Fluids in sport

QLD
Nutrition for Exercise and Sport Course
March 7, 2009
Newmarket, Brisbane
8.30am - 5.00pm
Topics as above

SA
Nutrition for Exercise and Sport Course
April 4, 2009
West Beach
8.30am - 5.00pm
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Sports Nutrition Course
May 1-4, 2009
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ERA will also be running a one day **Anthropometry Short Course**. This course will NOT qualify you as a Level 1 Anthropometrist. Dates are:

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Australian Association for Exercise and Sports Science (AAESS)

New Medicare items
As of November 1, 2008, allied health items (81300 to 81360) are available to people of Aboriginal and Torres Strait Islander descent, on referral from their GP.

1. These items are available only to people of Aboriginal and Torres Strait Islander descent who have had a health assessment during which the GP has identified a need for follow-up allied health services.
2. A person is of Aboriginal or Torres Strait Islander descent if they self-identify.
3. The GP must refer the person to an eligible allied health professional using a 'Referral form for follow-up allied health services under Medicare for people of Aboriginal and Torres Strait Islander descent'.
4. A maximum of five (5) services is available per patient each calendar year (in addition to allied health services available under items 10950-10970).
5. A Medicare rebate of $48.95 per service will apply, with out-of-pocket costs counting towards the extended Medicare safety net.
6. Allied health professionals must be registered with Medicare Australia.
7. Allied health professionals must report back to the referring GP.

For more
visit www.aaess.com.au

Changes to Medicare fees (as of November 1, 2008)

Area	Item Number	Description	Fee
EPC	10953	TCA - Exercise Physiology	$48.95
Type 2 diabetes	81110	Exercise Physiology - assessment for group services	$62.70
Type 2 diabetes	81115	Exercise Physiology - group services	$15.65

Changes to DVA fees

Item Number	Description	Fee
EP01	Consultation - Rooms	$57.55+GST
EP02	Consultation - Home	$61.80+GST
EP03	Consultation - Hospital	$61.80+GST
EP04	Consultation - Private	$61.80+GST
EP07	Group Session - per patient	$25.75+GST

Tennis drug ban proves that WADA has lost the plot

By John Orchard

One of the worst ever drugs-in-sport decisions -- and there have been some shockers, such as Andrea Raducan losing a gymnastics Gold medal at the Sydney Olympics for taking a Sudafed tablet -- was handed down by the International Tennis Federation late last week.

Italy's Filippo Volandri was banned for three months for "abuse" of salbutamol, the drug better known as Ventolin, for treating an asthma attack. Ventolin puffers are on the WADA (World Anti-Doping Agency) banned list, which in itself is bizarre given that they have not ever been shown to enhance sporting performance.

However, there is sensibly an exemption process for asthmatic athletes to apply for which permits them to take salbutamol puffers if a doctor diagnoses asthma. Volandri at the time of this so-called doping incident had registered an exemption for salbutamol use which had been accepted by the International Tennis Federation (ITF) as valid.

The complaint of the ITF was that the recommended dose for Volandri on his exemption form was two puffs and the concentration found in his urine suggested a much higher dose. Volandri admitted that he had taken a much higher dose on the night before his drug test and had a completely reasonably explanation for having done so: he suffered a severe asthma attack in his hotel room and couldn't breathe properly so continued to take his puffer until the attack subsided.

This is more than just completely reasonable -- Volandri would have possibly even died if he had not taken a high dose of Ventolin during such a severe attack. He was in a foreign city without recourse to an Italian speaking doctor and sensibly self-medicated to avoid being unable to breathe.

The tribunal apparently accepted all of this, but still decided to suspend Volandri for three months (and fine him for most of his 2008 prizemoney and ranking points), because the dose he admitted taking was higher than the dose that he was registered to take on his WADA/ITF paperwork. Click to read the ITF's outrageous press release and entire verdict.

The rationale behind this draconian verdict can be seen, but the question is what the ITF/WADA could reasonably have expected Volandri to do in the circumstances (of a severe asthma attack)? Obviously their expectation is that he should not have self-medicated but instead, in Indian Wells USA at 3am have somehow found an Italian-speaking sports physician who was prepared to not only prescribe a higher salbutamol dose but who was also prepared to fax off a revised form to the ITF medical commission.

Or perhaps take option B, which in the absence of such a doctor was to risk becoming one of the 5000 annual asthma deaths in the USA. At least in this instance he would have died as a cleanskin, rather than as a drug cheat.

Tennis has a chequered history of having let off 16 players in 2004 for positive drug tests for the anabolic steroid nandrolone. Nandrolone is a strongly performance-enhancing anabolic steroid and the rationale for not suspending the players who tested positive seems to have been that "the doping must have been inadvertent as it involved so many players". So after having turned a blind eye to so many proven anabolic steroid positives, they are now coming down heavy on asthmatics taking their puffers during asthma attacks.

Other than WADA and the ITF, the international sports journalism community should also be ashamed that it has reported this case as a routine doping decision rather than one of the greatest scandals in tennis history. A young man's life was saved by his sensible use of his own asthma medication but his career has been destroyed by a totalitarian doping agency. In August 2008, I wrote an article entitled "WADA is on the verge of losing the plot". It has now officially been lost.

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NSW
Club Warehouse Evening Lecture Series
March 12, 2009
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VIC
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March 25, 2009
7.30pm - 9.00pm

NSW
Injuries in Dancers: The Do's and Don'ts of Treatment
March 26, 2009
Presenter: Melinda Purnell
Time: TBA

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Registration closes February 28, 2009.

To view the program visit
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