

# Sport Health

Incorporating The Bulletin



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Cover photograph: Australian Sport Commission

# Who shouldn't prescribe exercise?

By Gary Moorhead

Over the next 40 years, the percentage of older (over 65) people in the Australian population will nearly double, while the percentage of people in the very old (over 85) cohort of the population will more than quadruple<sup>1</sup>.

While at first glance these “death-defying” statistics may seem a tribute to medical science and improved lifestyles, in fact they contain a time bomb that would make bin Laden envious. The time bomb is the health status of the cohort that will cause this increase in older Australians – the baby-boomers (usually defined as people born in the 15-20 years after the end of World War Two).

Older people have always had higher levels of chronic disease than the rest of the population, but the incidence of chronic disease increases with increases in levels of obesity and inactivity<sup>2</sup>. Unfortunately for the cost of healthcare in Australia, levels of obesity and inactivity are highest among the babyboomers.

Diabetes and coronary heart disease (CHD) data demonstrate how increases in obesity affect health costs. Obesity is an important risk factor for both Type 2 diabetes and CHD, with increasing weight associated with increasing risk. Diabetes accounts for 5% of the total burden of disease and is the seventh leading cause of Australian deaths<sup>3</sup>. While deaths from CHD reached a plateau in the 1970s and are trending down, heart “events” are trending up. Those suffering these cardiovascular “events” are being kept alive by pharmaceuticals and by surgical interventions – angiograms, pacemakers, defibrillators, stents and bypass surgery. Thus, even though deaths from heart disease are

trending down, the costs associated with treating heart disease are going up. With the ageing of the fatter, less active baby-boomer cohort, CHD “events” can be expected to increase in proportion.

Between 1989 and 2001, the number of obese Australians increased from 9% of the population to 16.7% but, in 2001, 21% of babyboomers were obese. In the same period, the numbers of the population who are overweight increased from 30% to 34%, but the percentage of babyboomers who are overweight increased to 67%, nearly double the population average<sup>4</sup>. At the same time, while only about half the adult population in Australia is sufficiently active for health benefit<sup>5</sup>, in the babyboomer cohort this percentage is less than 40%<sup>6</sup>.

In fact, the impact of the babyboomers' increased sedentary lifestyle is likely to be felt more widely than on just the health system. The sedentary behaviour levels projected will mean that this large cohort of the population will enter old age with insufficient functional capacity for tasks of daily living, placing much greater strains on social and community services as well as their own families.

This is all happening at a time when healthcare costs are already increasing at a much faster rate than other costs. Between September 2003 and September 2004, the Australian Consumer Price Index rose by 2.3%; however, the health costs component of the CPI rose by 5.8%, with hospital and medical services increasing by 7.7%<sup>7</sup>. Healthcare as a percentage of Gross Domestic Product (GDP) has risen in Australia from just under 5%

in 1970 to almost 9% in 2004. At the same time, in the United States these percentages have risen from 7% in 1970 to around 14% in 2004<sup>8</sup>.

In the USA, 22% of the population are obese and it is estimated that \$100 billion (which is equivalent to 5% to 10% of healthcare costs) is spent on obesity-related conditions annually<sup>9</sup>. Some commentators predict that health costs in the USA (and by inference Australia) could increase significantly above current levels. Kenneth Rogoff, Professor of Economics and Public Policy at Harvard University, predicts that “healthcare costs ... could exceed 30% (of US GDP) by the middle of this century”<sup>10</sup>.

What is the relevance of this to SMA and SMA members?

SMA's “Mission Statement” says that SMA will provide service to the community by functioning as the peak authority on “well-being through safe physical activity” and “prevention of health problems associated with inactivity”<sup>11</sup>. As these words are almost a literal copy of words appearing in the minutes of the very first meeting of the Federation in 1963, SMA can claim some historic consistency in being concerned about the impact of increasing sedentary lifestyles on Australian society.

The greatest hope for relief for the Australian economy appears to lie with policies that can produce a change in the energy balance in the Australian population.

Evidence for the benefits for population health of increased physical activity and healthier eating are now beyond dispute<sup>12</sup>. Achieving the minimum recommended physical

activity level of 30 minutes a day of moderate intensity physical activity will have a beneficial impact on all-cause mortality, cardiovascular disease, diabetes, obesity, cancer, mental and musculoskeletal health. For all-cause mortality, the risk reduction is around 30% for those achieving 30 minutes a day compared with those who are inactive.

Most encouraging from a health cost perspective, the greatest benefit in terms of all-cause mortality will be achieved by increasing the activity levels of the most sedentary. This also applies to cardiovascular disease prevention.

For diabetes, increasing physical activity has a beneficial impact, although some successful intervention trials have been costly. There is increasing evidence that physical activity contributes to reducing the risk of all-cause cancers, with the best evidence for breast and colon cancers. Prevention of osteoporosis and reduced risks of arthritis are the greatest benefits of physical activity in relation to musculoskeletal health. The exact nature of the relationship between physical activity and food intake in cancer and diabetes prevention is also still unclear – but it is evident that there is a clear independent benefit of PA in preventing diabetes, as well as breast and bowel cancer.

An excellent summary of this evidence (from which the above detail was taken) was contained in an article written by Professor Adrian Bauman from Sydney University, published by SMA in a special edition of the *Journal of Science and Medicine in Sport* in March 2004<sup>13</sup>.

From all of this, it is obvious that increased physical activity leads to a healthier population, less reliant on healthcare and (in the case of older people) better able to live with and manage a range of chronic conditions. It would thus seem that the founding fathers of SMA managed to place the organisation at the epicentre of the attack on what is looming as the largest public health crisis of the 21st Century.

This places SMA health professionals in the front line when it comes to dealing with the problem. In fact some professions – such as physiotherapy – have gone so far as to claim a degree of exclusivity in areas such as prescribing appropriate levels of physical activity. Naturally, prescribing activity to people with a range of chronic conditions requires a degree of expertise but whether or not this expertise resides exclusively with physiotherapy is likely to be disputed by a number of other professions.

**No one would dispute the importance of care in encouraging people with chronic conditions into increasing their activity levels. But at the same time, not to encourage them to increase their activity levels is to expose them to even greater risks to their health.**

Given the scale of the problem of inactivity in the Australian population, it is doubtful whether SMA would wish to sanction the restriction of the prescribing of its remedy to just one health profession and it is an unfortunate fact that the issue of prescribing exercise has at times shown the possibility of degenerating into a turf war between health professions. No one would dispute the importance of care in encouraging people with chronic conditions into increasing their activity levels. But at the same time, not to encourage them to increase their activity levels is to expose them to even greater risks to their health. In many ways arguments between the health professions about who is better qualified to prescribe activity is hair splitting. This is especially the case when for the majority of the population the advice will be little more than “try and walk 30 minutes a day”.

In fact, SMA has just conducted a major review and re-write of the SMA

Guidelines for Medical Screening Before Exercise. The major motivation for the re-write was the fact that a literal application of the old guidelines could have acted as a major barrier to people taking up activity and also have caused a significant increase in health costs in its own right<sup>14</sup>.

What the new Guidelines seek to do is remove the barrier that is imposed by ‘a need for screening’ on people who want to start a program of moderate intensity activity. They complement guidelines being developed by the National Heart Foundation to encourage exercise among people with CVD.

Some elements within the fitness industry have not been overly enthusiastic with the idea of using the SMA screening tool. Clients of fitness centres are usually looking at embarking on exercise programs that are more strenuous than walking. If any sort of strenuous exercise is being prescribed to people with risk factors, then compliance with a screening tool will be a fact of life. This will probably be necessitated for the credibility of the industry as much as for the safety of clients.

What must be avoided at all costs is the possibility that exercise prescription or the need for screening becomes one more of the confused and conflicting issues that currently bedevil the promotion of physical activity.

The media seize upon these distractions whenever they appear and their every airing provides a disincentive for those contemplating increasing their activity levels. At the 2003 Australian Conference of Science and Medicine in Sport in Canberra, there was a very amusing debate over “how much activity for health benefit: 30 or 60 minutes?” In the debate, the “60 minutes” team managed to “win” by confusing the issue of health benefit with the totally separate issue of weight loss. In the subsequent two years, these separate issues of health gain and weight loss from exercise continued to be confused in media reports. The ironic culmination of

this confusion was hearing the main protagonists from the 2003 Conference debate apparently fighting this battle again on a recent edition of the ABC current affairs program “PM”<sup>15</sup>.

Another “distraction” from the major message is the attempt to split up the components of the problem. Nutrition and diet issues are often treated completely in isolation from the activity/inactivity issues.

This article is being written at the start of “Healthy Bones Week” – a campaign aimed at combating osteoporosis in the Australian population and a campaign correctly targeted at children. The main features of any such campaign should be the encouragement of physical activity and a healthy diet. What is disturbing about this campaign from the SMA perspective is that it seems to be 99% focused on diet<sup>16</sup>. The fact that the week is heavily sponsored by the dairy industry probably has something to do with that fact; however, at a time when overweight and obesity levels among Australian children are going off the dial, we can suspect that the emphasis probably should be the other way.

Regardless of these distractions, the economic, health and social costs of our increasingly sedentary lifestyles cannot be ignored. “Inactivity” will force action and, the longer it is ignored, the more drastic that action is likely to be. SMA’s historic concern with combating the health problems associated with sedentary behaviour gives SMA and SMA members a degree of credibility in dealing with the problem. But it is essential that SMA and SMA members work to minimise distractions from the basic healthy activity message and make it a key part of every consultation.

Given the scale of the problem that the sedentary lifestyle is going to pose for Australian society, we simply cannot afford the distraction of squabbling among ourselves over who should or who is best qualified to prescribe activity.

The critical point is that the economic survival of this country — and the

wellbeing of a large number of its citizens requires that ALL SMA members — indeed, all health professionals — encourage physical activity at all times and know as much as possible about how to increase activity in their patients’ lives.

The issue of “who should prescribe exercise” will be the subject of a symposium at this year’s Australian Conference of Science and Medicine in Sport in Melbourne (3.30PM Friday 14 October). The symposium will feature contributions from general practice, physiotherapy, sports science, the fitness industry and a public health advocate as each seeks to detail the specific skills her/his profession brings to the task of prescribing physical activity.

## References

1. ABS Population projections 1999-2101 Catalogue 3222.0
2. “Economic Implications of an Ageing Australia”, Productivity Commission Draft Research Report, Commonwealth of Australia, November 2004, Pxxxiv
3. Marks C et al. “Type 2 Diabetes Costs in Australia: the potential impact of changes in diet, physical activity and levels of obesity.” Australian Food and Nutrition Monitoring Unit, Commonwealth of Australia, 2001.
4. AIHW: O’Brien K, Webbie K. (2003). Are all Australians gaining weight? Differentials in overweight and obesity among adults, 1989-90 to 2001. Bulletin No. 11. AIHW Cat. No AUS 39. Canberra: AIHW. Page 1.
5. Brown WJ (2004) “Physical activity and health: updating the evidence 2000-2003”. Journal of Science and Medicine in Sport. 7:1 Physical Activity Supplement.
6. Prime Minister’s Science, Engineering and Innovation Council (PMSEIC). (2003) Promoting Healthy Ageing in Australia
7. ABS 6401. Consumer Price Index 27/10/2004
8. Intergenerational Report 2002-2003. Budget Paper No. 5, 14 May 2002. P.34
9. American College of Sports Medicine Position Stand: Appropriate Intervention Strategies for Weight Loss and Prevention of Weight Gain for Adults, MSSE, December 2001
10. Rogoff K. “A Prescription for Marxism.” International Relations Journal, January/February 2005
11. <http://www.sma.org.au/about/>
12. United States Department of Health and Human Services. Physical Activity and Health: A Report of the Surgeon General. Atlanta, GA. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, The President’s Council on Physical Fitness and Sports. 1996
13. Bauman AE. Updating the evidence that physical activity is good for health: an epidemiological review 2000-2003. Journal of Science and Medicine in Sport Physical Activity Supplement. 7:1
14. Norton K et al. JSMS 1:1, 1988
15. ABC Online. PM – Physical activity guidelines fail men. Wednesday 20 July 2005.
16. “Make it Milk For National Healthy Bones Week” 15 July 2005 Backgrounder document supplied for the Launch of Healthy Bones Week, 8 August 2005.

# Doping in sp

Brent Crosswell was a talented Australian Rules footballer who has become an equally talented writer about the code. Many of his stories focus on the quirkier side of the game and no story was more quirky than his account of attempting to play at the elite level under the influence of marijuana. Apparently a pre-match joint made watching the antics of seagulls more interesting than winning the football.

Anyone who has read Crosswell’s account would wonder why WADA – the World Anti-Doping Agency – and the Australian Government have made such a big deal about forcing sport in Australia to take a hard line against marijuana use. There are very good arguments from a health and medical perspective for policies targeting marijuana users, but WADA is supposed to be about cracking down on performance-enhancing drugs.

Or is it?

Sports Medicine Australia and SMA members are totally supportive of all moves to crack down on drug cheats in sport, but many senior SMA members regard the spectacle of the Federal Government bludgeoning the Australian Football League into compliance with the hardline WADA stance on marijuana the latest in a growing list of concerns about the way WADA operates.

The AFL testing policy for marijuana was actually “tougher” than WADA’s. The Agency’s policy only insists on match-day testing, whereas the AFL had a 44-week out-of-competition testing program. However, where the WADA Code is based on catching, exposing, banning and humiliating athletes who use marijuana, the AFL approach was based on a primary concern with the health of the athlete

and sought to use counselling to affect rehabilitation.

WADA and the Australian Government seem determined to portray a hairy-chested, tough-on-drugs, no-exceptions image in a situation that is crying out for a more sensitive and intelligent approach. There is a concern that WADA is moving away from its charter of cracking down on drugs that are performance-enhancing, a direct threat to the health of the athlete or contrary to the spirit of sport and into healthcare areas where there are better ways of managing the problems – such as the AFL's approach to marijuana use.

These are not the only concerns with WADA.

Complying with the WADA Code is creating strains on the operation of sporting teams and sporting organisations that many feel are massively out of proportion to the scale of the risk posed by drug cheats.

Every year new drugs are added to the banned list or existing drugs have their status changed. It has been reported that the 2006 Code may even include some brands of hair-restorer that apparently possibly act as masking agents. Recently there was confusion over the status of cortisone creams. The mere fact of banning cortisone arouses the ire of many doctors who believe it is of minimal performance-enhancing value for most athletes but a powerful tool in the management of injury. Many drugs for the management of athletes with asthma also fall into this category. Doctors can apply for therapeutic use exemptions but compliance with Code clerical requirements may see athletes banned and possibly branded as drug cheats for simply getting the paperwork wrong.

Part of the problem seems to be insensitivity on the part of WADA – and the Australian Government and the Australian Sports Drug Agency (ASDA) – to the reality of life at the coalface. For example, current management of therapeutic use exemptions involves national sporting organisations in the communication chain between ASDA and the athlete's doctor. However, most NSOs have honorary and largely part-time medical officers and there is a danger that an application for an exemption could simply sit on a desk for a critical period before it is seen by the relevant medical officer. There are also probable privacy concerns in the use of open faxes in NSOs to send individuals' personal medical histories.

Complex paperwork, the potential adverse consequences of errors in form-filling and delays in securing permissions for exemptions are also cited in a growing list of compliance problems.

There is also a massive cost to sport in the testing for the growing number of drugs and other masking agents nominated by the WADA Code. Increasing numbers of people involved in sport are questioning the value of this approach. One alternative suggestion is for a more selective banning of drugs. This would see drugs banned only for sports where they are of genuine performance-enhancing value. It is claimed that such an approach would allow most athletes access to the use of cortisone for injury treatment.

The hardline approach has had a number of unfortunate outcomes.

The Federal Minister for Sport has managed to portray the AFL as an organisation that is "soft on drugs" when in fact the AFL should be commended as an example to

all sporting organisations for its enlightened policies in this area. At the same time, the commitment of the Government to initiatives to promote indigenous sport and rural and remote development programs has been called into question as it was prepared to cut funding to the AFL designated for these areas. On a more practical levels, doctors are concerned that athletes are becoming more reluctant to take medications prescribed for health problems or injuries for fear that the medication might have been included in the Code's Prohibited List.

In the longer term, forcing compliance with a demonstrably bad or stupid set of laws will lead to a lessening of respect for the law. Making athletes scapegoats for a society-wide hardline drug policy smacks of hypocrisy.

Worst of all, it is a concern of many in sport that most of the work of WADA is ineffectual. The serious drug cheats are still finding ways of evading detection. Chasing after recreational drugs and cracking down on minutiae is certainly a massive waste of time to those involved in dealing with the processes, a massive cost to sport and, at the end of the day, possibly ineffectual in catching the serious drug cheats such as the clients of the infamous Bay Area Laboratory Co-operative (BALCO).



# Struggling with the peer-review system

By Dr J

One of the modern pet hates of clinician researchers (particularly those who have had this title thrust upon them by the demands of the ACSP training program rather than their own choosing) is the peer-review process of scientific journals. A study which might literally take months to years to perform, and fully weeks to months to write up, can be dismissed by a journal editor and reviewers seemingly within minutes (once they have finally got around to reviewing your paper). In recent years, the bar seems to be set higher and higher, with the only redeeming feature being that the journal process for rejection is quicker than it once was, thanks to the elimination of sending manuscripts through the mail.

The answer to the question “Why do journal editors reject so many papers?” can be phrased simply as “Because they can”, or can be more graphically compared to a similar question whose answer seems obvious, such as, “Why do good-looking thin young girls reject so many guys who ask them out on dates?”

What really annoys potential authors to distraction though, is that the goal posts don't seem to be in the same place for each paper that gets reviewed. When you read the reviews of your rejected paper, it seems fair enough when comments get made like “This wasn't truly a randomised double-blind placebo-controlled study with large numbers and long follow-up, which would have been preferable for assessing this form of management”. This is until you open up the next edition of the journal that rejected you and see that the opening article is from a surgeon from Butcrack University Medical Centre who reviewed 18

patients after surgery (from the ones who bothered to present back to his office) and found that they all had an “excellent” result. Somewhere in the conclusion you could swear that you read a sentence which said “The most pleasing aspect of this study is that insurance companies will continue to pay huge rebates for me to perform this operation in the future, ensuring that I will be able to buy a lodge at the Butcrack ski resort to go with the beach house I already own”.

Yes, the peer-review process is most definitely a lottery, and fortunately I am in the position where I can afford to laugh about it. It upsets me that for ACSP registrars, getting a rejection from a prestigious journal has an equal effect on the candidate as failing an exam. If the peer-review process was a lot more objective, it might be a fair method of assessment, but it's even more subjective than, say, a viva exam! I contend that there are many excellent papers that have struggled to make it into peer review and some shockers that you can find using Medline. Just about my favourite of all time (with some very famous names amongst the authors) is “The meniscus as a cruciate ligament substitute. Collins HR, Hughston JC, Dehaven KE, Bergfeld JA, Evarts CM. *J Sports Med.* 1974 Jan-Feb;2(1):11-21” which describes “successfully” ripping ACL-deficient patients' menisci out and using them to attempt to reconstruct the ACL.

Just as Michael Jordan once said “you miss 100% of the shots that you never take”, the only thing worse than not having a paper published in a PubMed-listed journal is not writing it in the first place. I am often asked how I manage to get so many papers published while still having an active

clinical practice and looking after a professional football team. One of the key answers is that I don't waste time in the peer-review process. I'm quite happy to submit a paper to a journal and, with very few exceptions, if it doesn't get accepted first go (with minor revisions) then I shoot it off to *Sport Health*, the New Zealand Journal of Sports Medicine, Sportslink or even just put it on my website at [www.injuryupdate.com.au](http://www.injuryupdate.com.au).

The beauty of the Internet is that the cost of on-line publication has become very cheap (even if print publication is more expensive than ever). I think eventually that even scientists will cotton on to the fact that a Google search is just as important (not relevant but important) as a PubMed search on a topic of scientific interest. The most obvious example of this is when you have a topic where a medical decision must be made. Too often all the scientific literature tells you is that nothing is proven beyond reasonable doubt, yet in the real world you still need to make a decision. With a lot of sifting through chaff, there are still some pearls out there on the internet that you can't find in a PubMed search.

Fortunately I write enough stuff that does get accepted in PubMed-listed journals so that my legitimacy as a researcher is not in question. The way the major journals are heading makes me think I will have less and less time in the future to be able to devote to playing their (often unnecessary) games. Probably heading this list is ethics committees. I have been through an ethics committee a handful of times and I would just about rather spend my next holiday in India drinking putrid river water.

I agree that ethics committees need to exist, because some researchers have to kill animals or make humans take Vioxx in order to get their study completed and there needs to be a check on whether these studies are justified. However, a good proportion of studies are intrinsically ethical and don't need a politically-correct committee to pick them to pieces. They particularly don't need 25 extra pages to be filled in and for informed consent forms to be translated into tribal Aboriginal before a study will get passed. I don't think that a collective review of patient data (without revealing the names of patients) should require a signed consent before it can be done, for example, but an ethics committee is sure to disagree. If an ethics committee was asked how many people lived in Australia, they would surely take 12 months to come up with the answer of "6 million people, not counting those who chose not to participate in the study".

The rest of this article will describe a paper which follows using aprotinin injections in tendinopathy. Put me in jail for longer than Rodney Adler if you like, but I didn't have this study approved by an ethics committee. It may amaze those of you in ivory towers, but those patients who participated were happy to be asked for follow-up information without needing to sign a consent form. I hope that many readers find this paper interesting. Some of you might – others might find more interesting the reviewer comments, posted below, from a PubMed-listed journal which rejected this paper.

I wasn't surprised with the comments. They are all pretty consistent. I think it is likely that if I submitted this paper elsewhere that it may also be rejected with similar comments. I wanted to write this paper up because I noticed that a significant number of my patients I was treating with aprotinin were getting allergic reactions. This is pretty important information.

Some of the reviewers have said that I should have just written up these cases and basically made the paper "a

case series of allergic reactions caused by aprotinin injections". However, the whole point of giving an aprotinin injection is not to cause an allergic reaction but to try to improve results in tendinopathy. I fully appreciate that a case series, even with largish numbers, showing that patients are pretty happy with their injection outcomes is only level 3-4 evidence of efficacy. However, in a world where level 1 and 2 evidence is so rare, it reassures me that patients are mainly satisfied with the treatment I am giving them after follow-up.

Yes, read this paper with a grain of salt. The good clinical results may be due to placebo effect, the natural history of the condition or simple prolotherapy which could have been achieved with an injection of glucose instead. At least there is some encouragement to do more RCTs.

The funny thing is that patients don't really give a rat's proverbial about RCTs. At the time I was treating dozens of patients for Achilles tendinopathy with aprotinin in a non-randomised fashion, we (Richie Brown and I) were trying to cast a wide net to recruit patients into an RCT. The patients all wanted to know "How are the other patients doing who have had this treatment?" and, when the answer was "Generally well", they mainly wanted to just get the aprotinin injection rather than be enrolled in a study where they have a 50% chance of getting the injection. Being someone who does follow the tendinopathy literature fairly closely, of course I offered them other treatments as well, many of which they had previously tried and had failed.

In terms of hard-core science, the take-home message of the following paper is that aprotinin has the potential to cause allergic reactions even with local injections. However, it seems ridiculous to throw out the results of subjective follow-up of patients just because the methodology is not as good as it could have been. Therefore I would much rather publish this paper as is in Sport Health than put a chainsaw through

it and send it back in to the big time journals.

It is also worthy of note that some excellent quality papers describing efficacy of aprotinin injections in tendinopathy have been published by the Capasso group, but these don't get considered in Cochrane reviews etc, because they have appeared in non PubMed-listed journals.

Anyway, next time you collect an interesting clinical case series of three patients with a rare condition, or collate two year's worth of pre-season fitness parameters from a sports team, why not send it in to Sport Health or give it to me to post (with acknowledgement) on injuryupdate.com.au? I agree it is research of a quality that will probably bounce from the majors, but so-called low level research is better than none at all. After all, it's what we base at least half of our clinical practice on!

## See page 24: The risks of aprotinin injections

### Reviewer comments regarding the aprotinin paper from peer-review:

#### Reviewer 1 Comments

This work needs so much correction/revision and conceptual change that I think it should be rejected. The paper purports to study the risks of aprotinin injections for chronic tendinopathy. It begins to but wanders off into discussing its efficacy. We don't use this drug in this country for tendinopathy (usually it's used for blood conservation/hemostasis in cardiac or joint replacement or spine surgery). The part on efficacy is fraught with numerous

inconsistencies with numbers, no consistent method of usage, the results are jumbled and almost anecdotal in reporting. The risk part starts with known data (RE: Beierlein, W. Ann Thorac Surg 2005) and tries to compare with that. The level of evidence here is very low. The technique of application is not discussed (peri-tendinous or intra-tendinous). The risks or side affects are poorly described (7 cases of systemic allergic reaction occurred but not described as to specifics). Adequate follow-up is not defined. Multiple conditions were treated in the same patient and the numbers in results were not consistent. There was a 20% no response. In short, I think too many obstacles to overcome.

- 1) make this a study of risks only
- 2) the numbers reported must "add up" to be consistent
- 3) telephone contacts are not adequate.

- 4) need definitions eg. protocol, systemic allergy, what is "substantially improved"?
- 5) what was technique of administration?
- 6) a control (another med or saline) would be helpful for comparison. e.g. Capasso et al., Sports, Exercise, and Injury article.

#### Reviewer 2 Comments

The authors report on a diverse group of patients who undergo aprotinin injection for treatment of chronic tendinopathy. Although this is a fairly large number of consecutive patients, and the response rate is reasonable at 80%, there are some major flaws in this study. The patient population is quite diverse including a special subpopulation of professional athletes. Additionally the injury being studied is not well defined. The authors used the term "tendinopathy" and do not distinguish between tendonitis, tendinosis and peritendinitis. They do not discuss how the diagnosis is formalized or whether radiologic modalities such as ultrasound or MRI utilized. There are also multiple different injury sites involved. There is no clear discussion of the indications for a first injection or subsequent injections. And finally the outcome criteria are very weak. As this is an uncontrolled study, I think using a purely subjective patient derived questionnaire as a sole form of outcome data is quite weak. While the information on the incidents of allergic reaction does appear to be valuable information, it has already reported in the literature. Based on this weak study design and the fact that this is not new information, I do not think that this manuscript is suitable for

publication in this journal.

#### Specific Comments for the Authors:

The authors state that this is a case review and follow up of a 121 consecutive patients. I think it would be more accurate to say that this is a retrospective case review and mention that follow up was obtained through mailed questionnaires.

The authors should mention whether the institutional review board at their hospital approved this study.

It would be helpful if the authors would clarify the inclusion criteria for their study. They say that there are 155 different tendinopathy cases. Does this mean tendinitis? Tendinosis? Peritendinitis? How was the diagnosis made? Is this purely a clinical diagnosis or were MRIs or ultrasounds performed in some cases?

I'm curious whether the authors noticed any correlation between the anatomic location of injection and results.

What were the indications for aprotinin injection? Was this offered to all patients with tendinopathy, or only if they failed to improve with rehabilitation? Also what were the indications for a second injection?

The authors state that 8 cases were followed up for less than 3 months. Clearly this is not an acceptable length of follow up to determine "success".

The authors state that "in general, there was good progress of the patients' conditions". I don't think it's legitimate to make this

statement based strictly on patients' objective assessments.

#### Reviewer 3 Comments

According to the title of this paper, its main purpose is to report the risks of aprotinin injections for chronic tendinopathy. The specific risk that the authors cite is the risk of allergic reaction. However, much of the manuscript is devoted to a moderately expansive description of the patient population and the efficacy of the treatment. The work was not really designed to report on efficacy and therefore this aspect of the paper is very problematic.

It appears that the authors did not really plan to be doing a study at all, but were using aprotinin extensively and noticed allergic reactions, so decided to report them. As a treatment study, the paper is very spotty in the available information, and does not have the strength of methodology to comment on the efficacy of the treatment. Follow-up is subjective, it does not seem that concomitant treatments such as PT were controlled, and there is no control group. In order to report on the possible efficacy of this off-label use of a drug, the authors should perform a RCT.

The allergic reactions could be separated out and submitted as a series of case reports, with the number of cases treated during the time period being delineated so that the incidence of these complications could be estimated. This might serve as a warning to those who might wish to use this treatment on their own.'

## Notice of Annual General Meeting and Call for Nominations

Notice is hereby given that the Annual General Meeting of Sports Medicine Australia will be held at the Melbourne Convention Centre, Corner Flinders and Spencer Streets, Melbourne, at 4.00PM Sunday 16 October 2005.

#### Agenda

1. Opening
2. Roll Call, Apologies and Proxies
3. President's Welcome
4. Minutes of the Previous AGM
5. Reports
6. Consideration of financial statements & audit report
7. Board Election (if required)
8. Appointment & remuneration of auditors
9. Special Business
10. Close

#### Call for Nominations – Board of Directors

Members are asked to provide nominations for positions on the Board of Directors of Sports Medicine Australia.

#### Executive Members:

President, Vice President, Financial Director

#### National Directors

NSW, South Australia

#### Discipline Director

I ..... of.....

hereby nominate .....

for the position of .....

on the National Board of Directors of Sports Medicine Australia

Proposer's Signature..... Date.....

Second (full name) .....

Second's signature..... Date.....

**Nominations should reach: Sports Medicine Australia, PO Box 237, Dickson ACT 2602 or fax to (02) 6230 5908**

**BY NO LATER THAN 5.00 PM (EST) ON MONDAY 26 SEPTEMBER 2005**

Notes to the validity of nominations to the Board of Directors of SMA



# Swimming

## How Australian exactly is the crawl?

Gary Osmond

When Alice Mills, Grant Hackett and company dived from the starting blocks at the World Swimming Championships in Montreal, Australians would have been cheering them on from our lounge rooms and pub stools. What we were watching was their performances and times, but many other aspects of their swims will have been taken for granted: standardised, Olympic-sized pools, for instance, lane ropes, and even their swimming strokes.

We rarely hear comment on these facets of swimming competition, and take them as given, unexceptional, and perhaps even as historic features. Yet wind back the clock 100 years and we see that these are no more 'natural' than instant video replays, underwater cameras and hydro-dynamic 'fastskin' swim suits.

This realisation throws modern swimming competition into historic relief and raises questions about the ways that sport has been historically and culturally defined. In this article I will discuss my research into the origins of the crawl stroke in Australia, take you into a lagoon in the Solomon Islands, and muse over the 'strangeness' of modern sporting events such as swimming.

My research considers the origins of the crawl stroke.

### The crawl

According to Australian sport history, a young Solomon Islander named Alick Wickham introduced the crawl at a boys' swimming race at Sydney's Bronte Baths in 1897. Prior to this date, the most popular competitive strokes were the sidestroke, breaststroke and the now-antiquated

trudgen stroke, which combined an overarm technique with a scissors kick. Australian swimmers were amazed at Wickham's speedy new style, and a prominent coach named the stroke when he yelled excitedly "Look at that kid crawling over the water!". These swimmers subsequently introduced the revolutionary new stroke to the world through their participation in international competition.

Sport history has a strong tradition of myth-making, stories that typically ascribe the origins of a sport to one individual who invented, innovated or introduced a new sport or sporting technique in a singular, seminal 'moment'. Baseball and Rugby Union, for instance, have the Abner Doubleday and William Webb Ellis stories, which have been shown to be myth. My research indicates that the Wickham crawl story is similarly mythical.

Appealing and colourful though it may be, the tale misrepresents the past by overlooking a more complex and evolutionary process.

Sufficient traces of the past remain to reveal that some Australians had experimented successfully with the crawl prior to Wickham's arrival in Sydney. While he popularised the activity through his mastery and technique, he did not introduce the stroke as history would have us believe. Rather than explore that any further here, I'll simply make the point that the crawl, now a common and perhaps quintessentially Australian sporting practice, was once new and 'strange' in Australia.

Where the crawl was not new and strange was in other parts of the Pacific. I travelled to the Solomon

Islands late in 2004 to further research Wickham and the crawl stroke.

Wickham (1886-1967), the son of a English trader and a Solomon Islander mother, was born and raised in Munda, on the lip of the beautiful and tranquil Roviana Lagoon. It was here that he learned and practised the crawl, a popular and traditional stroke known locally as *tapa-tapala*, which he used to great effect in Sydney where he was a noted swimming champion in the years before World War I.

Early versions of the crawl were known in Samoa and Hawaii, among other places, and had inspired Australian swimmers before Wickham's arrival, but I was interested in learning more about the Roviana style because of its association with Wickham. And I was not disappointed; immediately after my arrival I spied young children frolicking in the lagoon who were happy to demonstrate the finer points of the *tapa-tapala*. Village elders were also pleased that I was interested in learning more about their culture, and I anticipated a productive research visit.

Productive it was, but predictable it was not. Instead of expounding on the *tapa-tapala*, locals were much more keen to discuss traditional diving practices. The *tapa-tapala* was an everyday thing, kids' play even, seen as quite unexceptional, whereas diving conjured up strong memories and local pride.

### Feet-first diving

I had produced a photograph from my archival research, taken around 1910, of a diving platform erected

in the Roviana Lagoon. This photo generated a tremendous amount of excitement during my stay. Ko-ku are tripods of up to 10-metres high positioned on the edge of fringe reefs close to shore. Divers would scale the ko-ku, and leap feet-first into the depths. In competitions, the winner was the person who could leap the farthest with the least splash. I was taken by boat to view and photograph these apparatuses, which are still used, and was regaled by tales of their recreational and sporting uses, building materials and structural variations. What was apparent was the community pride and cultural importance associated with these ko-ku compared with the tapa-tapala.

Accordingly, Wickham is remembered and valued locally more for his diving skills than for his swimming abilities.

While the ko-ku was fascinating, it struck me at first mainly as a quaint curiosity and not too serious an endeavour. After all, feet-first leaping is not diving as we know it, and would not be as valued in our Western cultures as head-first plunges from similar heights. Yet here, in this corner of the Pacific, it not only held pride of place in sporting memories but also outranked the crawl stroke as a skill. On reflection, therefore, I had to admit that one was no more strange or normal than the other, and that what I had stumbled upon simply confirmed how sport is a cultural construction, specific to a particular time and a place. Of course there is nothing new about this realisation, something that is discussed in most first-year university courses on sport as a socio-cultural phenomenon, but its revelation in a new context was instructive nonetheless.

One hundred years ago, when the crawl stroke was new in Sydney and espoused only by a few individuals, it too was considered a strange phenomenon.

Although it is difficult for us to imagine today, the speedy stroke that now defines freestyle competition was dismissed by many as 'unseemly' and graceless because of its fervent,

splashing action. It was considered to be hard to learn, and very difficult to master. It challenged established notions of 'proper' swimming techniques, methods passed down from English competition but themselves in a gradual state of evolutionary flux as the quest for speed in swimming gathered steam.

Put simply, the crawl in Federation-era Australia was strange, not unlike the ko-ku to (my) Western eyes today. What finally changed attitudes were the faster times produced and gradual refinements in breathing technique and stroke style that enabled its effective use over middle and long distances.

Nevertheless, it took several decades before the crawl completely usurped the popular trudgen in competition. Unlike the Wickham crawl myth, which paints a glossy history of the stroke as an instant revelation by one young man that changed the course of swimming history overnight, the path to the current domination of the crawl was a slower, messier and evolutionary process.

A short article such as this possibly raises more questions than it can answer, yet in some ways that is the intention. Its purpose is to draw attention to the 'strangeness' of sport as a social and cultural construction and to argue that there is nothing 'natural' about any of our sports. That is not to argue that movement does not come naturally to humans, but that the combinations and formalisations of bodily movements with defined aims and guiding rules are invented and are done so differently in varying sporting contexts over time.

Here I have attempted to show that the crawl stroke, which we take for granted in 2005, is a relatively recent addition to the canon of Western sport. It is the subject of a creation myth, which attributes its introduction to Alick Wickham from the Solomon Islands and which obscures the complexity and messiness of the stroke's Australian provenance.

My attempts to research Wickham and his version of the crawl led me to a localised diving practice in the Pacific, which served to highlight the culturally specific nature of sport. There, diving from ko-ku is arguably more valued than the crawl, the complete opposite of modern Australia where the crawl represents the pinnacle of swimming achievement and where any feet-first leaping would fail to garner more than cursory interest.

My point is not to argue the merits of one over the other, but to suggest that one person's sport is another person's play. The lesson reminds me that the crawl was not always known or embraced in Australia as it is today, but has a complex cultural history and was also once considered to be odd, eccentric and of limited utility. Keep this in mind the next time we're barracking for Alice and Grant and the rest of the Australian, and make swimming 'strange'.

**Gary Osmond is a PhD student in sport history in the School of Human Movement Studies at The University of Queensland. His thesis examines myth, race and memory in the context of Pacific islanders in Australian swimming and surfing history. Email: gosmond@hms.uq.edu.au**

# Indigenous Sport

## The Aboriginal experience in sport

Mark O'Neill

Sport has been one of the few areas of Australian culture in which Aboriginal Australians have occupied prominent places on the public stage. Aboriginal athletes have featured in major domestic competitions, in national teams, and on the international stage in a number of individual sports. Consequently, elements of the Australian society have constructed monuments to both commemorate and remember various athletes' lives and achievements. Interestingly, these commemorative practices are as diverse as the athletes they chose to represent.

This diversity results from the problems associated with constructing a history, because any form of history is inevitably loaded with ideological and theoretical implications. As the real events which constitute the past are essentially different from the selective reconstructions which form histories, the choice of what to include in a history is necessarily contested. Commemorative practices of Aboriginal athletes are no different. The final choice of who, what, where, and how Australia has remembered selected Aboriginal athletes is evidence of this process.

Evonne Goolagong Cawley was a talented and successful player on the international scene for well over a decade. A two-time Wimbledon and four time Australian open champion, Goolagong Cawley won 92 international tournaments during her playing career. As an inductee into the Australian Tennis Hall of Fame in 1994, her achievements are commemorated in a sculpted bust displayed during the Australian Open at the Melbourne Park Tennis Centre.

Goolagong Cawley's monumental

presence at this major international sporting event allows Australia to be portrayed as a nation in which sporting opportunities have been easily accessible to all people, including Aboriginal athletes. Unfortunately this has not been the case. Tennis in particular provides an excellent example, because Goolagong Cawley remains the only tennis player inducted into the Aboriginal and Torres Strait Islander Sporting Hall of Fame.

The dominant experience of Aboriginal athletes in Australia has been of exclusion, restriction, and discrimination practised and enforced by both societal and sporting bodies. This experience is vividly recalled in the south east Queensland town of Cherbourg. Here one of the town's football heroes, Frank Fisher, is commemorated with the Frank "Big Shot" Fisher Memorial Bridge on the only road into and out of town.

Fisher, a talented all around sportsman, was a extraordinary Rugby League five-eighth who was offered a professional Rugby League contract in England in 1936. Despite being described by English captain AJ "Gus" Risman as "the best country footballer" he had seen, Fisher had to suffer the ignominy of having to ask permission from the relevant authorities to leave the Barambah Aboriginal reserve to take up this offer. This request was ultimately denied on the incongruous grounds that, because another Barambah inmate named Eddie Gilbert was playing first class cricket, "one sporting star from Barambah was enough".

Through the Memorial Bridge named in his honor, Fisher's prodigious

and unrecognised (to the world outside of Cherbourg) talents are celebrated and the memory of the unfair and immoral discrimination he faced on the basis of his skin is recalled. (As an interesting postscript, Fisher's granddaughter is Cathy Freeman, which may explain her strong symbolic actions supporting Aboriginal rights and identity.)

In contrast to this still local memory, other local commemorations of previously unknown or unrecognised Aboriginal athletes have served to preserve a memory which is dramatically reintroduced into the national consciousness.

Johnny Mullagh was the star of the 1868 Aboriginal cricket tour to England, the first such sporting endeavour by any team from the Antipodes. A tremendously talented and skilled all-rounder, Mullagh was celebrated in England and Victoria during and following the tour. However, in no place was this celebration as strong as in Mullagh's home town of Harrow in western Victoria.

On Mullagh's death in 1891, the town renamed their sports oval the Johnny Mullagh Memorial Park and erected a monument to Mullagh's cricketing achievements. Unfortunately, in the years that followed his death, Mullagh's place in Australia's cricketing pantheon was sadly neglected. Apart from Derek Mulvaney's Cricket Walkabout, Ashley Mallet's The Black Lords of Summer and the erection of the monument in Edenhope, the 1868 team's achievements were sparsely mentioned in Australia's sporting heritage.

» *Continued on page 22*

# 2005 ACSMS

## Preparing for the Commonwealth Games

Not 1 but 3 in 1 – the annual Australian Conference of Science and Medicine in Sport this pre-Commonwealth Games year is joined by the Fifth National Physical Activity Conference and the Fourth National Sports Injury Prevention Conference.

### Message from conference chair Dr Jill Cook

The Organising Committee of the 2005 Australian Conference of Science and Medicine in Sport invites you to join in this exciting exchange of ideas for “promoting innovation, measuring success” in sports science, sports medicine, physical activity and injury prevention.

The conference theme of promoting innovation and measuring success will be explored at all the three conferences in one, and gives us an excellent opportunity to keep abreast of the very latest findings and developments in research and practice.

This year, the program includes several outstanding speakers from around the world as well as Australia who are leaders in research and practice in sports medicine and sports science. Among all the other activities, it will bring together leaders in their field in debate on two current controversies in Australia and, via telelink, physical activity experts here and in the United States who are attending the US Walking for Health Conference which is happening at the same time as ours.

Our 3-in-1 Conference will be an exciting – and congenial – chance for delegates to discuss and explore innovative sports medicine and sports science techniques, and (if they wish) to take part in the associated leisure-time activity.

I look forward to seeing you in Melbourne



The three conferences take place on 13 to 16 October in the one venue: the Melbourne (Victoria) Convention Centre.

Over the four days of the 3-in-1 conference, nine keynote speakers will be featured, 38 invited speakers, 14 workshops and 13 symposia. About 250 new research podium papers and 100 posters will be presented.

### Sponsors

The 2005 Conference Gold Sponsors are Asics, the Victorian State Government, and the Australian Department of Health and Ageing.

The 2005 Silver Sponsors are the Australian Sports Commission, the Heart Foundation and the New South Wales Sporting Injuries Insurance Scheme.

### Themes

#### Key themes of the 2005 ACSMS are:

- who should be responsible for exercise prescription and delivery
- bone health and exercise
- Type 1 diabetes
- economic cost
- recovery
- hydration vascular, and
- overuse injuries, forces and foot orthoses.

#### At the Fifth National Physical Activity Conference, the key themes are

- translating evidence to policy and practice
- measurement and/or theoretical models



- children's physical activity and sedentary behaviour: determinants, interventions and health outcomes
- older people
- Indigenous people
- walking and cycling initiatives across the lifespan
- environments
- whole communities
- obesity and chronic disease
- general practice, and
- physical activity advocacy.

#### Key themes of the Fourth National Sports Injury Prevention Conference are:

- cost burden of injuries
- implementation and evaluation of IP strategies
- ACL prevention strategies
- behavioural aspects of injury prevention, and
- risk management in sport.

## Workshops

The 14 workshops will cover such issues as:

- on-field skin closure techniques
- Functional Fascial Taping®
- is your patient's bra a help or a hindrance?
- posture pilates class
- important tests in assessing forefoot symptoms
- back health on the ball
- on-field emergency medicine
- joint injection techniques
- practical procedures in sports medicine
- assessing heat stress
- clinical tests for diagnosing mechanical foot pathologies
- making sense of proprioceptive exercise
- clinical tests for predicting foot orthoses outcomes, and
- professional presentation skills.

## Symposiums

There are 12 symposiums, covering:

- bone health and exercise
- exercise prescription and delivery
- tendons
- ankles
- vascular issues
- recovery
- hydration
- overuse injuries, forces and foot orthoses
- Type 1 diabetes in sport
- dental injuries in sport
- physical activity and children, adults and older people, and
- building on activity scripts for GPs.

## Debates

There will be two debates this year.

Eminent and high-profile members of Sports Medicine Australia (SMA) will debate "Controversies in sports medicine: any publicity is good publicity".

Distinguished physical activity and public health researchers will battle with leading sports science and sports medicine practitioners on whether or not "half the funding that goes to elite sports should be reallocated to the promotion of physical activity at grass roots level".

## Special features

Special features at this year's conference are a community sports workshop supported by the Victorian Department of Sport and Recreation, and a telelink on physical activity with the US Walking for Health Conference.

The workshop, which takes place on Sunday 16 October, has been designed for those who are involved in sports injury prevention at the community level.

It will include an update on current risk management issues and interventions and how they affect the community-level administrator.

Issues to be covered include:

- an international and domestic overview of risk management in sport
- current interventions and innovations, including SmartPlay
- the need for clubs and associations<sup>5</sup> to collect injury data
- the role of community-level players in research: facilitators, barriers and lessons learned
- current guidelines on fluid replacement
- preventing dental injuries in sport.

# Investing in the Future

## The Young Investigator Awards

A very special – and very valuable – feature of the Australian Conference of Science and Medicine in Sport every year are the awards which are open to delegates who present free papers there.

And among the most sought after are the Young Investigator Awards – not only because of their monetary value but also because of the opportunities they give to the winners to present their own research and to broaden contacts in their field.

As an example, winners of 2004 Young Investigator Awards were able to travel to, register for and present at the 2005 American College of Sports Medicine Conference in Nashville.

They were:

Nick Potter of the Centre for Health, Exercise and Sports Medicine (CHESM) at The University of Melbourne whose paper “Navicular stress fractures: outcomes of conservative and surgical management” won the Ken Maguire Award for Best Young Investigator – Clinical,

Fang Wang of the Orthopaedic Research Institute whose “Involvement of C-Jun N-Terminal Kinase JNK) in the oxidative stress-induced tendon cell apoptosis and matrix degradation” won the John Sutton Award for Best Young Investigator – Basic Science, and

Adam Bryant from Central Queensland University whose paper “Effects of menstrual-cycle hormone fluctuations on musculotendinous stiffness and knee joint laxity: implications for ACL injuries” was awarded the Asics Award for Best Young Investigator – Lower Limb.

Their award – a Presentation Package at ACSM – was the opportunity to register for and present at ACSM, with air fares and accommodation provided.

Nick Potter, whose letter of thanks is reproduced here, highlights the professional as well as personal benefit from attending ACSM provided by the Young Investigator Awards.

The other Young Investigator Award – the \$2500 NSW Sporting Injuries Committee Award-Best Young Investigator-Injury Prevention – went to Ebony Scase for her paper “Physical training programs reduce injuries in elite junior Australian Rules football: evaluation of an injury prevention strategy”.

Well over 100 presentations by young researchers are vying for the Young Investigator Award at the 2005 Conference.

Most of these researchers are from leading universities in the fields of sports science, public health and physical activity. The University of Queensland, providing eight researchers in the Young Investigator Category, is the leader, followed closely by The University of Western Australia and Deakin University), The University of New South Wales and the University of Technology, Sydney.

Marilyn Feenstra, National President of SMA, believes that the Young Investigator Awards have huge significance for sports science and sports medicine.

“You’ll find in the lists of past winners, teachers, practitioners and researchers who are prominent in their fields and in the literature in Australia and internationally.

“The sponsors who put up the Young Investigator Awards – the SMA Fellows, Asics and the NSW Sporting Injuries Committee – in their own quiet way make an investment beyond value in the progress in Australia of sports science and sports medicine.”

### Thanks from a Young Investigator

*For the first week of June this year the southern American city of Nashville (Tennessee) was overrun by Sports Physicians, Orthopaedic Surgeons, Physiotherapists, Exercise Physiologists, and the odd medical student, when it played host to the 52nd Annual Meeting of the ACSM.*

*Fellows of SMA had generously donated to create the SMA Young Investigator Prizes, which included travel, accommodation and registration for the American conference. This year 3 Australians: Dr. Fang Wang from The Orthopaedic Research Institute; Dr. Adam Bryant from Central Queensland University/CHESM, The University of Melbourne and myself from CHESM, were able to make the journey and present in Nashville.*

*The Conference itself was held at ‘The Gaylord Opryland’, which we were assured is the “largest convention centre in the world without a casino”. An imposing sight, the centre of the complex includes a canal and a Venetian style gondolier conducting water tours for visitors. In the presentation rooms research institutions from around the world were represented, with strong contributions from Australians (Dr. Peter Brukner, CHESM; Dr Karen Holzer, Royal Melbourne Hospital; and many others) and part-time/former Australians (Dr Chris Bradshaw, Fulham Football Club; Dr Stuart Warden, Indiana University).*

*We 3 presented our research as posters in a free communication session that was well attended and though throwing up some thorny questions, drew enough interested parties to hopefully generate further research opportunities in future years.*

*Despite an unadvisable visit to Nashville’s most successful Elvis impersonator (insisted upon by one of the Fellows as contributing to my education, though not as exciting for someone born 3 years after his death) the conference was rewarding both personally and professionally. The breadth of papers, cases, lectures and workshops meant there was always at least one session (and usually more) in action that was directly relevant to your own area of interest.*

*The major purpose of this letter was both to give a quick snapshot of what the meeting was like for a first-time attendee, but more importantly to thank the Fellows who so generously donated the funds to support young researchers and to allow myself and my colleagues the chance to experience presenting at a major international conference.*

*Yours faithfully*

*Nick Potter*

# 2005 ACSMS Program

2005 Australian Conference of Science and Medicine in Sport  
Thursday 13 October

## Thursday October 13

Practical Workshops (0730-0830)						
0730-0800	On Field Skin Closure Techniques	Practical Procedures in Sports Medicine, Gavan White	Professional Presentation Skills, Margaret Grant	Functional Fascial Taping, Ron Alexander	Back Health on the Ball, Lisa Westlake	Clinical tests for predicting foot orthoses outcomes, Craig Payne
0800-0830						
Conference Sessions (0900-1700)						
Time	Sports Science	Sports Medicine	Other Medical	Physical Activity - Adults	Physical Activity - Government	Physical Activity - Children
0900-0925	Official Opening - The Honourable Justin Madden MLC, Minister for Sport and Recreation, Minister for the Commonwealth Games					
0930-1000	Keynote: Redefining sports medicine - from sprained ankles to clogged arteries, Roald Bahr					
1000-1030						
1030-1100						
Morning Tea						
1100-1130	Bone Health and Exercise Symposium Keynote: "Translating cellular and tissue responses to mechanical loading to practical outcomes", Shona Bass, Invited: Stuart Warden	Invited - Irene Davis	Psychology Free Papers	Keynote: People or places - what should be the target?, Billie Giles-Corti Respondent (Kylie Ball)		
1130-1200		Knee Free Papers				
1200-1230						
Lunch						
1230-1300	Commonwealth Games Session - Intro to Games					
1300-1330						
1330-1400						
1400-1430	Bone Health and Exercise Symposium Invited: Karim Khan and Free Papers	Rehabilitation Free Papers	Music Symposium, Invited: Clay Miller	PA, sedentary behaviours and BMI in adults	Intersectoral PA taskforces - Why are they successful?	Prevalence and trends in PA in children
1430-1500						Commonwealth Games Session - Infectious Disease
1500-1530	Afternoon Tea					
1530-1600	Exercise prescription and delivery - who should do it? Symposium Invited: David Spurrier, Anita Green, Chris Tzar, Nancy Huang and Grant Pavia					
1600-1630						
1630-1700						
1700-1900	Welcome Reception & Poster Session A					
1900-late	Fellows Dinner					

## Time Practical Workshops (0730-0830)

16 | Sport Health



2005 Australian Conference of Science and Medicine in Sport  
 Saturday 15 October

## Saturday October 15

Time Practical Workshops (0730-0830)						
0730-0800	Practical Procedures in Sports Medicine - Gavan White	Joint Injection Techniques, Bill Straughan	Posture Pilates Class, Francine St George	Functional Fascial Taping, Ron Alexander	Making Sense of Proprioceptive Exercise, David Spurrier	Important tests for the sports Podiatrist in the assessment of forefoot symptoms, John Head
0800-0830						
Time Conference Sessions (0830-1700)						
Time	Sports Medicine	Sports Science	Other Medical	Physical Activity - Active Transport	Physical Activity - Population and Places	Physical Activity - Formative Research
0830-0900	Keynote: "Foot orthoses, theory and evidence for their biomechanical effects", Kevin Kirby					
0900-0920				Tele Link to US Walking Conference Adrian Bauman		
0930-1000	Overuse Injuries, forces and foot orthoses Free Papers	Overtraining and Chronic Fatigue in Athletes Free Papers	Nutrition and Performance Free Papers	Walking to school	Programs with women	Programs with indigenous people
1000-1030			Shoulder Free Papers			
1030-1100	Morning Tea					
1100-1130	Overuse Injuries, forces and foot orthoses					
1130-1200	Symposium featuring Craig Payne, Tim Barbour and Kevin Kirby	Exercise Physiology Free Papers	Vascular Symposium - All about Clots and Compression	Travelsmart	Environments and SES	Determinants and planning interventions for teenagers
1200-1230						
1230-1300	Lunch					
1300-1330						
1330-1400	Recovery Symposium featuring Shona Halson, Michael Makdissi, Mark Andersen	Sports Free Papers	ACL Free Papers	Cycling	Symposium: Measurement issues in GIS research	Determinants and planning interventions for adults
1400-1430						
1430-1500						
1500-1530	Afternoon Tea					
1530-1600						
1600-1630	Recovery Symposium and Free Papers	Alcohol Management in Sport Workshop featuring Gaylene Clews	Debate - Half the funding that goes to elite sport should be reallocated to the promotion of physical activity at grass roots level			
1630-1700						
1700-1900	Gala Dinner					
1900-late						

2005 Australian Conference of Science and Medicine in Sport  
Sunday 16 October

Sunday October 16

Practical Workshops (0800-0900)											
0800-0830	Clinical tests for predicting outcomes of foot orthoses, Craig Payne	Heat Workshop, John Brotherhood	Joint Injection Techniques, Bill Straughan	Is your patient's bra a help or a hindrance? Deirdre McGhee	Posture Pilates Class, Francine St George	On Field Skin Closure Techniques					
0830-0900											
Conference Sessions (0900-1600)											
Time	Sports Medicine	Other Medical	Sports Injury Prevention	Sports Injury Prevention	Commonwealth Games						
0900-0930	Type 1 Diabetes Symposium featuring Shane Hamblin and Kate Marsh	Dental Symposium	Keynote: Running right: Relationship between mechanics and injury, Irene Davis Research Designs to maximise injury prevention		Commonwealth Games Session - Intro to Games						
0930-1000											
1000-1030											
1030-1100	Morning Tea										
1100-1130	Hydration Symposium featuring Louise Burke, John Brotherhood, Greg Cox and Michelle Cort	Ankle Symposium, Roald Bahr, Willem van Mechelen	Risk Management for sports administrators and sporting organisations	Why collect injury surveillance data at clubs and associations	Commonwealth Games Session - Infectious Disease						
1130-1200											
1200-1230											
1230-1300	Lunch										
1300-1330											
1330-1400	Refshaug Lecture: Does academic research provide any real benefit for sports medicine clinicians? Dr Jill Cook		Community level players in research: Facilitators, Barriers and lessons learnt	Interventions and Innovations	Commonwealth Games Session -Emergency Medicine						
1400-1430											
1430-1500	Afternoon Tea										
1500-1530	Debate: "Controversies in sports medicine: Any publicity is good publicity" and Closing										
1530-1600											
1600-1630											
1630-1700											
SMA AGM											

# Window on Research

ACSMS's traditional podium and poster presentations provide a lively and intriguing opportunity to see the extent of the range of the research activity going on in science and medicine in sport.

Roughly 250 podium presentations are scheduled over the four days of the Conference and 100 poster presentations.

This selection from the podium presentations is an example:

**Physiotherapy versus home-based rehabilitation on outcomes following ACL reconstruction**

A/Prof Erik Hohmann, Central Queensland University

**Contact and non contact sports and sexual aggression within Australian sporting teams: a preliminary investigation**

Ms Rosanne Coutts, Southern Cross University

**The knowledge of youth performance soccer coaches in identifying talented young soccer players**

Ms Kate Vrljic, The University Of Queensland

**Muscle soreness after downhill running: a preliminary study into the influence of age on perceived soreness**

Mr James Fell, University Of Tasmania

**A prospective investigation of shoulder pain in Australian competitive swimmers**

Ms Helen Walker, The University of Melbourne

**The psychological recovery of athletes following anterior cruciate ligament reconstruction**

Ms Jennifer Langford, La Trobe University

**The role of psychosocial factors in explaining socio-economic differences in physical activity participation**

Dr Philayrath Phongsavan, The NSW Centre For Physical Activity And Health

**Family influences on the critical window of health related behaviour after school**

A/Prof Geraldine Naughton, Australian Catholic University

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**Become an asthma friendly sports club: the development of an interactive CD-ROM resource**

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Dr Melissa Crowe, James Cook University

**The use of aprotinin injections in chronic tendinopathy: risks and benefits**

Dr John Orchard, The University Of New South Wales

**Clinical studies of topical glyceryl trinitrate treatment in chronic tendinopathies**

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**Performance-related health issues in elite musicians Physical characteristics, pain patterns and playing action in skilled violinists**

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**Active Script -- 'Making an Impact': connecting GPs to physical activity providers**

Mrs Tracey Roebuck, General Practice Association Of Geelong

**Injury risks in Rugby Union**

Mr Trevor Savage, The University of New South Wales

**Adolescent fast bowling injuries in club cricket**

Ms Debra Shirley, The University of Sydney

**Injury rates in boxing: how do they compare with other sports?**

Miss Tsharni Zazryn, Monash University.

The poster presentations range just as widely. Some examples:

**Biometric logging, the Internet and wireless technologies: improving coach and athlete performance through technology convergence**

Mr Adrian Faccioni, GP Sports Systems

**Concussive head injury among children and adolescents: comparison of injuries among organised sports, roads and traffic, and other leisure physical activities**

A/Prof Gary Browne,

**Physiological responses during a 9 hr sheep shearing world record attempt: a case study**

Dr David Bishop, the University of Western Australia

**Isokinetic torque-angle testing and eccentric training as a strategy to prevent hamstring injury in AFL football players**

Mrs Jodi Richardson, Monash University

**Do New Zealand premier rugby club coaches give good nutrition advice to their players?**

Ms Caryn Zinn, Monash University

**Dental injuries among Australian basketball players based on insurance claims data**

Dr John Banky, Dentist-in-a-Box

**Can team statistics predict performance in Olympic men's basketball?**

Dr Anthony Leicht, James Cook University

**Attitudes, beliefs and headgear wearing patterns of female rugby players**

Ms Maria Romiti, The University of New South Wales

**Skill-based modified sports programs for younger participants; the risk of boredom and drop-out**

Dr Rochelle Eime, University of Ballarat

**Training community coaches and managers in the immediate treatment of strains and sprains**

Mr Simon Gianotti, Accident Compensation Corporation, New Zealand

**Managing head injury in non-elite field hockey and Australian football: a qualitative study**

Dr Alexandra McManus, Curtin University of Technology

**How do sports medicine doctors decide to prescribe local anaesthetic injections to athletes?**

Ms Kacey Williams, The University of Melbourne

**Safety education level of gymnastics coaches in Sydney**

Ms Karen Beatty, The University of New South Wales

**Attitudes of midwives towards the recommendation of exercise during pregnancy**

Prof Stephen HS Wong, University of Hong Kong

**Low back pain elite and semi-elite Australian football codes: Australian Rules, soccer, Rugby league and Rugby Union**

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# Awards

## Sixteen prestigious awards valued at more than \$30,000 will be won at 2005 ACSMS. They are:

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\* Presentation Package at ACSM includes return economy airfare, three nights' accommodation and registration at the Annual Conference of the American College of Sports medicine, plus a guaranteed place in the conference program.

These awards are open to all free paper presenters at the conference, though presenting authors must be full registrants at the conference and must also be SMA members. Membership of SMA is open to Australian and international delegates. Authors who wish to be considered for Young Investigator Awards have to be under 36 years of age and they have to select the 18-35 age bracket when submitting abstracts.



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Refshauge Lecture: Does academic research provide any real benefit for sports medicine clinicians?

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An international perspective on implementing a national physical activity policy: a Norwegian view Treatment of patellar tendinopathy: eccentric training, sclerosing therapy or surgery?

### **Dr Shona Bass, Deakin University**

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Bone Hoppers: effectiveness of an intervention to promote bone health in children

### **Professor Irene Davis, University of Delaware**

Running right: relationship between mechanics and injury

### **Dr Billie Giles-Corti, The University of Western Australia**

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### **Dr Kevin Kirby, California School of Podiatric Medicine**

Foot orthoses, theories and evidence for their biomechanical effects

### **Dr Scott McLean, Cleveland Clinic Foundation**

The ACL injury dilemma: prevention is impossible if we don't know the cause

### **Professor Willem van Mechelen, VU University Medical Centre, Amsterdam**

Worksite interventions for health promotion

## Invited speakers

### **Mark Andersen, sports psychologist, Victoria University**

.05 does not mean a hell of a lot

Talking to clients and patients: building rapport ain't that easy

### **Tim Barbour, sports physician, private practice**

Lower limb chronic compartment syndromes: an update

### **Simon Bartold, Research Fellow, University of South Australia**

Windlass mechanics: does athletic footwear make a difference?

### **John Brotherhood, senior lecturer, The University of Sydney**

Making sense of sports sweat losses

### **Louise Burke, sports dietitian, Australian Institute of Sport**

Guidelines for fluid replacement for athletes: updates

### **Gaylene Clews, sports psychologist**

Alcohol management in sport

### **Michelle Cort, sports dietitian, Australian Institute of Sport**

Fluid intakes and sweat losses in athletes: data from the new hydration monitoring tool

### **Greg Cox, sports dietitian, Australian Institute of Sport**

A new tool for monitoring hydration in athletes

### **Belinda Gabbe, epidemiologist, Monash University**

Evolution of an RCT trial of hamstring conditioning to prevent hamstring injury in community-level AFL: perfecting the methodology

Clubs and associations' role in research

### **Jan Garrard, senior lecturer, Deakin University**

Cycling for active transport and recreation in Australia: status review and future directions

### **Anita Green, sports doctor**

The role of the sports doctor in exercise prescription and delivery

### **Shona Halson, fatigue and recovery scientist, Australian Institute of Sport**

### **Shane Hamblin, endocrinologist, private practice**

Innovations in the management of athletes with type 1 diabetes

### **Stephanie Hanrahan, sports psychologist, the University of Queensland**

Teaching psychological skills to peques: influence on quality of life

Games for team engagement: having fun with a purpose

### **Michael Makdissi, general practitioner, private practice**

### **Kate Marsh, dietitian, private practice**

Nutrition issues for DM1 athletes

Sports foods during exercise, recovery

### **George Murrell, Director, Orthopaedic Research Institute, Sydney**

Advances in .....tendinopathy

**Leonie Otago, sports injury epidemiologist, University of Ballarat**

**Craig Payne, podiatrist, La Trobe University**

Dysfunctions of the windlass mechanisms  
Forces and foot orthoses

**Chris Rissel, Sydney South West Area Health Service**

Cycling for active transport and recreation in Australia: status review and future directions

**Jo Salmon, Deakin University**

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**Chris Tzar, exercise physiologist, private practice**

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Workshop: On-field emergency medicine

**Margaret Grant, physiotherapist**

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Workshop: Important tests for the sports podiatrist in the assessment of forefoot symptoms

**Kevin Kirby, podiatrist**

Workshop: new clinical tests for diagnosing and understanding mechanical foot pathologies

**Deirdre McGhee, sports physiotherapist**

Workshop: Is your patient's bra a help or a hindrance?

**Craig Payne, podiatrist**

Workshop: Clinical tests for predicting foot orthoses outcomes

**David Spurrier, sports physiotherapist**

Workshop: making sense of proprioceptive exercise

**Francine St George, sports physiotherapist**

Workshop: Posture Pilates

**Bill Straughan, sports doctor**

Workshop: Joint injection techniques

**Lisa Westlake, physiotherapist**

Workshop: Back health on the ball/ Wake up on the ball for length, strength and control

**Gavan White, sports doctor**

Workshop: Practical procedures in sports medicine

» Continued from page 11

side in 1988 and the inauguration of the Johnny Mullagh Trophy match in 2001, this omission began to be corrected. The first Johnny Mullagh Trophy match in 2001 between a select Prime Minister and an Aboriginal and Torres Strait Islander Commission XI highlighted the absence of Aboriginal players from first class cricket in Australia.

Importantly though, the establishment of the Johnny Mullagh Cricket Centre in Harrow allowed for prominent calls for official recognition of the 1868 team in the annals of Australian cricketing history.

Opened in 2004, the Centre tells the full story of the players and their unique journey to England. It serves as a museum of the tour and a place where the sporting achievements and historic discrimination of the past are told in full. It was while opening this centre in 2004 that Justin Madden,

the Victorian Minister for Sport, called for Johnny Mullagh to be inducted into the Australian Cricketing Hall of Fame. This followed Ian Chappell's call in 2003 for the entire team to be included in the official count of Australian Test representatives. These appeals were finally answered and the team was officially recognised in a ceremony at the 2004 Boxing Day Test where playing numbers were allocated and a presentation took place of a framed replica of the guernseys worn by the team in 1868. This allowed the team to take their unique place in the sporting memories of Australia.

These three uniquely individual-commemorative sites recall the diverse treatment and experiences of Aboriginal athletes in Australian sporting history.

They show us that recalling the inglorious treatment of Australia's

past can lead to fuller and richer understandings of Australian sport and the achievements of individuals. In doing so, they also reveal how the past cannot be summed up in broad overarching statements but must be seen to contain varied and nuanced narratives and experiences.

In the case of Aboriginal athletes, Australia's history has been both inclusive and exclusive, but nonetheless a large number of Aboriginal and Torres Strait Islander athletes have shone through. It is for this reason that such commemorative practices as the ones at Melbourne, Cherbourg and Harrow are vital, necessary, and appropriate.

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# The risks of local aprotinin injections for treating chronic tendinopathy

John Orchard, Jamie Hofman and Richard Brown

Overuse or degenerative tendon injuries (tendinopathies) are common in sport, certain occupations and even everyday life. They are difficult to treat because of the high failure rate of treatment, tendency towards chronicity and risk of recurrence.

Cortisone injections have been used as a standard management option for tendinopathy for many years and in fact remain the only 'indicated' form of injectable treatment in most countries. There is some evidence that cortisone injections are successful at treating shoulder tendinopathy<sup>35</sup> and tennis elbow<sup>31,33</sup> in the short-term but very little evidence that cortisone injections are useful for patellar tendinopathy<sup>12</sup> or Achilles tendinopathy<sup>26</sup>. Cortisone injections appear to be effective at giving pain relief from tendinopathy in the short-term, which may be due to inhibition of prostaglandins<sup>21</sup>. It is also known that cortisone injections weaken tendons and are possibly associated with tendon rupture. Therefore they are often considered contraindicated for heavy load-bearing tendons such as Achilles tendons in athletes<sup>32,33</sup>.

The scientific evidence base for managing overuse tendinopathies is limited. Some conservative treatment options, such as eccentric exercise<sup>3,30</sup> and nitrate patches<sup>28,29</sup>, show promise in treating various tendinopathies. Alternate injections to cortisone have been described, such as aprotinin, calcium gluconate, auto-injection of patient's own blood, dextrose, dry needling and saline with local anesthetic<sup>27</sup>. This form of treatment is sometimes referred to as prolotherapy (meaning a treatment that causes tissue proliferation).

Aprotinin is a drug which is particularly good at preventing blood loss during major surgery, its major indication<sup>7</sup>. Aprotinin is a broad

spectrum serine protease inhibitor, with particular inhibition of trypsin, plasmin and kallikrein<sup>14</sup>. It is a strongly basic polypeptide, which is currently derived from bovine lungs, with a half life of approximately seven hours<sup>14</sup>. It may block matrix metalloproteinases (MMPs), including MMP-1, MMP-8 and MMP-13 (collagenases) and MMP-2 and MMP-9 (gelatinases), either directly<sup>11</sup> or via inhibition of plasminogen and plasmin<sup>23</sup>. It has been used in injection form for management of chronic tendinopathy in Italy<sup>9</sup>, France<sup>5</sup>, England<sup>25</sup> and Australia<sup>27</sup>.

There has been one randomised double-blind controlled trial published showing statistically-significant superior results to both cortisone injection and placebo injection in patellar tendinopathy at 12 month follow up<sup>9</sup>. For treatment of Achilles tendinopathy, there has been one semi-controlled study showing promising results with aprotinin injections<sup>8</sup> and one recent other substantive case series, with good clinical results, published<sup>5</sup>. Aprotinin has been used (with clinical success) to treat tendinopathies in France since the 1970s<sup>17,18</sup>.

Aside from the limited published trials showing a moderate level of evidence of efficacy, the use of aprotinin is particularly attractive when compared to cortisone (the 'standard' injectable treatment) in chronic tendinopathy as it (aprotinin) probably affects tendon as a collagenase inhibitor. Aprotinin has been used successfully as an agent to promote tendon healing

after surgery (as a component of 'fibrin glue')<sup>22</sup>. Unlike cortisone, aprotinin is a pro-fibrotic agent and is theoretically likely to lead to tendon proliferation rather than degeneration, although this has not been proven to date. Collagenases (MMP-1 and MMP-13) and gelatinases (MMP-2 and MMP-9) have been shown to be present in excessive proportions in patellar tendinopathy<sup>16</sup>, Achilles tendinopathy<sup>1,20</sup> and rotator cuff tendinopathy<sup>24</sup>, although MMP-3 (a stromelysin) has been shown to have decreased concentrations in Achilles tendinopathy<sup>1,20</sup> and rotator cuff tendinopathy<sup>24</sup>. Aprotinin has been shown to inhibit osteoblast-mediated degradation of type-I collagen in vitro<sup>34</sup>. Aprotinin may also possibly have an effect on the neovascularisation in tendinopathy, which is an area of recent focus for treatment of tendinopathy<sup>2</sup>.

The major potential negative of using aprotinin is the side effect of allergy, which is well described in the anaesthetic literature<sup>6,13</sup>. The rate of allergic reaction with initial exposure is very low, but approaches 3% when re-exposure occurs within 3-6 months<sup>6,13</sup>. The controlled trials of aprotinin use for tendon injuries described very few problems with allergy (two patients out of 32 had a 'local' allergic reaction in one study)<sup>9</sup>, although a rate of 11% of patients suffering allergic reactions was reported by Aubin et al<sup>5</sup>. This paper did not give detail regarding the severity of the allergies. Eleven deaths have been reported due to allergic reaction associated with intravenous use of



aprotinin<sup>6</sup>, although in these cases the patients were also compromised with a pre-existing cardiac complaint. From a safety viewpoint, it is also worth noting that doses used in major surgery are approximately 20 times greater than for tendon injections and are injected intravenously rather than subcutaneously. The test (loading) dose in major surgical cases is close to the therapeutic dose for tendon injections.

The primary author of this paper (JO) has been using aprotinin for peritendinous injection of chronic tendinopathies since the year 2000. No major side effects were observed in the first two years of use of this drug, over which the number of injections would have been in the hundreds. The clinical success of this drug led to an increasing number of referrals being made to the practice of the primary author and frequency of treatments. During 2003-2004, when a greater number of injections were being used, a significant number of allergic reactions were noted, prompting this case series review.

The objective of this study was a chart review and clinical follow-up of all patients who had been treated for a tendon injury with the aprotinin brand Trasylol (Bayer, Leverkusen, Germany) over the period February 2003-June 2004 by the primary author at either of two clinics, particularly to assess the rate of adverse reactions.

## Methods

A chart review of all patients for which aprotinin was used for tendon injections over the designated time period was performed by the second author (JH). The name and address of the patient was noted, along with diagnosis, time of symptoms, level of sport, dosage used and follow up recorded in the medical records.

A standard questionnaire was developed to assess side effects and perceived clinical response to aprotinin (see attached Appendix 1). The questionnaire was sent to the last known address of the patient, along with a return stamped envelope. If no response was received within a month, a further questionnaire was sent. If no response was received within two weeks of this second mailout, the second author (JH)

attempted to contact the patient by phone to ask the same questions.

The response to the mailout for the general population was good, although, for professional athletes (who made up a significant proportion of the patient population), the response was quite poor. This is understandable as they receive large amounts of mail compared to the general population. With respect to the professional athletes, some information was able to be obtained by conference with the athlete's team doctor or referring (treating) doctor. In 10 cases, this information was of sufficient quality that the data was included in the analysis. These additional inclusions were important, as two of these cases included significant potential side effects.

## Results

There were 121 patients treated with aprotinin over the designated time period, for 155 different tendinopathy conditions (cases). Thirty-seven cases involved females and 118 involved males. Sixty cases involved athletes playing or competing at professional or elite level, with the most common sports being track and field, Rugby Union and Rugby League. The average age of patients was 35.1 years. The average duration of symptoms was 15 months.

A total of 422 aprotinin injections were used, an average of 2.7 per patient. The most common conditions injected were: Achilles mid-substance tendinopathy (151 injections), Achilles insertional tendinopathy (48 injections), patellar tendinopathy (98 injections), medial hamstring insertional tendinopathy (31 injections), proximal hamstring origin tendinopathy (29 injections) and lateral epicondylitis (27 injections).

The standard protocol of injection was 3 ml of aprotinin mixed with 2 ml of 2% lignocaine plain. The aprotinin was drawn up with a fresh needle from a vial of 50ml Trasylol containing 500,000 KIU, which was stored in a cool cupboard or refrigerator. Trasylol is only available in Australia in 50 ml or 100 ml vials (and is similarly only available in large vials in the USA). The 3 ml dose of active agent used was 30 000 KIU. This is a slightly lower dose

than that used by Capasso et al<sup>9</sup>, with the strength of aprotinin diluted by local anaesthetic. Because local anaesthetic is acidic and aprotinin is basic, this mixture appeared to be associated with minimal pain during the injection process.

The patients were instructed that the injections should not interfere with the mainstay of treatment for tendinopathy, which is eccentric exercises and moderate tendon loading<sup>27</sup>. Apart from resting for the remainder of the day after the injection, the patients were not only permitted to load the tendon moderately the day after the injection, they were also actually encouraged to, by continuing their eccentric exercises and exercising as they were previously (within pain limits).

Generally patients were advised to wait a minimum of one to two weeks between each injection, as per the protocol of Capasso et al<sup>9</sup>. However, this varied and with some patients there were many months between injections.

Of the 155 conditions treated, adequate follow up was achieved regarding 124 of them, a response rate of 80%. The other cases were all non-responders, with no patient making contact but refusing to divulge follow-up details. The average duration between initial injection and follow-up was 9.3 months (SD 6.3 months). Only eight cases were followed up at less than three months. Follow-up was achieved for all known cases of allergic reaction or tendon rupture, including two cases which did not respond by questionnaire initially (as mentioned in the methods). There were seven further cases in professional or elite athletes where adequate follow-up was not achieved (and hence these were not included in the series) but where it was observed that all had returned to full competition (eg, Olympic Games, professional football competitions).

Side effects of injections (perceived or actual) were quite common (Table 1), although the majority were not severe. In 78 cases there were no side effects, with 46 cases having associated side effects (possibly related to the injection). Thirty percent of patients reported having

itch at the injection site, making this the most common side effect. This is thought therefore to represent a common side effect of local aprotinin injection, despite the facts that patients were warned prior to injection about this risk and itch is a symptom which may be exaggerated by the power of suggestion.

**Table 1 – Frequency of associated side effects**

SIDE EFFECT	NUMBER	% (PER CASE)*
Itch, slight	27	22
Itch, severe	10	8
Rash	12	10
Sweating	9	7
Post-injection pain	9	7
Nausea/abdominal cramps	8	6
Systemic allergic reaction	7	6
Headache	5	4
Tendon damage	2	2
Post-injection bleeding	1	1

\* As the average case had 2.7 injections used, the per injection rate is lower than this. Patients were only asked which side effects they had suffered, not on how many occasions they had suffered each. However, the systemic allergic reactions were only suffered once as no patient had a repeat injection after this time.

There were no side effects of infection from the cases followed up. However, there were 19 cases (10%) with side effects that may have represented allergic reactions (severe itch, nausea, sweating or rash). In seven of these cases (6%), a definite systemic allergic reaction was considered to have occurred, based on the presence of multiple significant systemic symptoms. Four patients were treated within 30 minutes of the aprotinin injection with subcutaneous adrenaline (epinephrine), which resulted in successful reversal of the allergic symptoms. No patient had a drop in blood pressure or required hospitalisation or further management other than a single epinephrine injection. However, the patients treated with epinephrine may have deteriorated further if anti-allergy treatment was not given.

Of concern is that two patients described symptoms that were

considered to be due to systemic allergic reactions (sweating, nausea, abdominal pain within one hour of the injection) but had left the clinic and therefore were not medically observed with these symptoms.

No serious allergic symptoms occurred on the first injection for any patient in the study. This makes the observed rate of systemic allergic reaction 0% on the first injection and 2.6% on subsequent injections.

The interval between last and second last injections for the cases of systemic allergic reaction was 7, 7, 8, 14, 21, 21 and 40 days respectively, with an average of 17 days. Three systemic allergic reactions occurred on the patient's second exposure to aprotinin, two on the third and two on the fourth exposure. The average interval between injections for cases where no allergic reaction occurred was 31 days.

There were two cases of tendon rupture which both occurred to the Achilles tendon. One case of partial rupture occurred many months after the use of aprotinin in an elite hurdler, who had subsequently sought treatment elsewhere with a cortisone injection for a recurrence of the condition. This patient felt that the cortisone injection may have possibly been related to the tendon rupture but that it was unlikely that the aprotinin injections were related, because of the time delay and more recent use of cortisone. This occurrence of partial tendon rupture is therefore considered unlikely to have been a complication of aprotinin use in this case.

The second case involved a high level Rugby League player, who had a course of three aprotinin injections over three weeks for long-standing Achilles tendinopathy, and suffered a complete rupture of the Achilles tendon in a game five days after the third injection. He also had a past history of panhypopituitarism which was being treated at the time with anabolic steroid supplementation.

He felt that the aprotinin injections had improved his Achilles tendon pain and allowed him to continue playing, when the severity of the tendon pain meant that "he should have been resting from playing", and therefore he did not attribute the rupture to the aprotinin injections. He underwent

a successful Achilles tendon repair and returned to play in the following season. In this subsequent season he suffered contralateral Achilles tendinopathy and returned for further aprotinin injections (not included in this series, but incidentally with a successful result), but this time waited three weeks after the final injection to return to play. The occurrence of tendon rupture in this case is considered moderately likely to have been associated with the use of aprotinin, with the possible mechanism that pain relief achieved from the injection may have allowed the athlete to continue high risk activities for tendon rupture. Direct chemical damage to the tendon from aprotinin can not be entirely ruled out, but is considered improbable.

In general, there was good progress of the patients' conditions, with 69% of patients improved, 29% similar and 2% worse at the time of follow up. Of the conditions that had improved, the majority were substantially improved (46% of the total number of conditions treated) – see Table 2

**Table 2 – Patient assessment of progress of condition at the time of follow-up (average 9 months)**

PROGRESS STATUS	NUMBER	%
Completely cured	10	8
No pain but reduced exercise	10	8
Much better	37	30
Slightly better	29	23
Similar	36	29
Slightly worse	1	1
Much worse	1	1

The patients' impression of the value of injection was also reasonably impressive. No patients thought that the injection made the condition worse, although 38% were unsure that the injection(s) affected them either way. The remaining 62% were almost evenly split between thinking that the injection(s) may have helped them or definitely helped them. Both patients who suffered the tendon ruptures did not attribute this to the use of aprotinin.

## Discussion

This study confirms clinical results that are compatible with those described in previous published controlled trials<sup>8,9</sup>, but shows a risk of systemic allergic reaction (6% of cases, or 2.6% per injection subsequent to the first) that was not described in these trials. An even higher rate of allergic reaction (11% or seven out of 62 patients) was described in a previous case series, in which patients were given an average of four injections of aprotinin at an average interval of seven days<sup>5</sup>. However, in this case series the details of allergic reaction (and whether local or systemic) were not presented.

If local aprotinin injections are used in rapid succession (ie, within 1-3 months), the risk of systemic allergic reaction on subsequent injections appears to be similar to the 2.8% risk described in the anaesthetic literature<sup>6</sup>. Fortunately the degree of anaphylactic reaction is probably always going to be less from a local injection with 30,000 KIU than an intravenous dose of 10-20 times this amount. Methods which have been described in the literature to guard against anaphylactic reaction have been to limit the use of the drug when there has been recent exposure, to take prophylactic anti-histamine medication and to check for sensitivity with skin prick tests and to take serum samples for aprotinin-specific IgG. The risk of anaphylactic reaction is reported to drop substantially after three months

has passed since prior exposure and is almost non-existent if aprotinin-specific IgG is not detectable in serum<sup>6,13</sup>.

The risk of allergic reaction is therefore substantial with repeated exposure and patients must be alerted of this prior to their being offered repeat aprotinin treatment. Any patient who has a history of allergy to animal products or other major anaphylactic reaction from any cause should probably not be offered aprotinin. In addition, all patients should wait at the medical centre for 30-60 minutes after the injection, so that any signs of allergy can be treated. Two of the patients early in this series had left the practice soon after their injection and did not return but called up later to describe symptoms which probably constituted an allergic reaction, and which came on within an hour.

Because of the risk of anaphylactic reaction, which could be severe and even potentially life-threatening, aprotinin should not be chosen as first line therapy for tendinopathy ahead of safer treatments like eccentric exercise and topical nitrates. However, for load-bearing tendons it could be chosen ahead of cortisone because of an increasing likelihood of tendon healing, and could be chosen ahead of surgery as the combined risks of major complications with surgery (eg, infection, DVT, tissue damage) are probably of greater concern in many cases than the risk of allergy.

The clinical success of injections and minimal number of cases where the tendinopathy condition was worsened in this series gives further encouragement to additional trials on aprotinin as a treatment for tendinopathy. However, the recommended protocol to be assessed probably should not include repeat injections within two months. Basic science evidence is supportive of the use of aprotinin for tendinopathy of an overuse nature, particularly compared to cortisone injections. This work suggests that aprotinin may assist tendon healing (by reversing the effects of collagenases which break down tendon) whereas cortisone will tend to weaken tendons.

Although aprotinin can reverse the effects of drugs such as heparin and streptokinase, it appears to have no negative pro-thrombotic effects. When used in cardiothoracic surgery, aprotinin is associated with reductions in perioperative stroke with no increase in deep venous thrombosis or graft thrombosis<sup>7</sup>.

In Australia, aprotinin is only available in 50 ml or 100 ml vials, which are not recommended for multi-dose use due to potential risk of contamination<sup>15</sup>. Either these should be used as a single-use therapy or great care must be taken to avoid contamination.

A further proposed complication of aprotinin treatment is the potential to contract bovine spongiform encephalopathy (BSE)<sup>10</sup>. Since this potential complication was raised, Bayer, which is the major manufacturer of aprotinin, has outlined the precautions taken to make sure that aprotinin does not contain viral prions<sup>19</sup>. Steps taken include that the product is only sourced from countries with no BSE, that the tissue used is in the lung (rather than neural tissue) and that a purification process is undertaken. There have been no suspected cases of BSE transmission in 40 years of aprotinin use.

A consent form has been developed as a result of the complications seen in this study to warn patients of the risk of aprotinin therapy, particularly to counsel regarding risks of allergic reaction. The only proposed risks not mentioned on the consent form are those which are thought to be either effectively zero or not related to aprotinin therapy (risks of BSE and thrombotic complications).

There have been recent attempts to manufacture aprotinin-like polypeptides in a recombinant fashion that could potentially give similar clinical effects yet not lead to nearly the same degree of allergic reactions<sup>4</sup>. If this is successfully introduced to the market (and hence allergy becomes a far less likely complication), aprotinin may become a first-line treatment for tendinopathy.

**Table 3 - Impression of injection**

IMPRESSION	NUMBER	%
I am sure that the treatment completely cured my condition	7	6
I am sure that the treatment made my condition better	31	25
I think that the treatment may have made my condition better	39	31
I am unsure whether the treatment did anything	47	38
I think that the treatment may have made my condition worse	0	0
I am sure that the treatment made my condition worse	0	0

Aprotinin is a promising treatment for tendinopathy, with moderate current evidence to support its use in the form of controlled studies. This study shows results which are compatible with the previous work but illustrates the high risk of allergy with repeated aprotinin injections. There is a need for informed consent, screening of suitable patients and preparation of an emergency plan for an allergic reaction.

**John Orchard and Richard Brown are at The University of New South Wales and Jamie Hofman at the Free University of Amsterdam.**

**Survey and Consent forms can be obtained from [info@injuryupdate.com.au](mailto:info@injuryupdate.com.au)**

**Table 4 – Potential side effects associated with aprotinin injections.**

SIDE EFFECT	ESTIMATED RISK
Minor allergic reaction (e.g. itch)	Very common (up to 30%).
Systemic allergic reaction	Rare with initial injection (1 in 1000 reported in anesthetics). Not uncommon thereafter (up to 3% per injection). Spacing injections out (> 6weeks between treatments) reduces this risk, as may anti-histamine treatment and use of skin prick tests.
Worsening of patient's condition	Appears to be uncommon. Physical damage from tendon injection is unlikely if no attempt is made to penetrate the tendon with the injection technique. As a collagenase inhibitor, it is unlikely that there will be any chemical damage to the tendon.
Tendon rupture	There is a risk of tendon rupture with continued loading. Aprotinin has a short half-life and theoretically should not cause tendon weakening. It is unlikely that aprotinin contributes to the risk of tendon rupture, other than by assisting the return to risk activity.
Other cardiovascular condition	In surgery, aprotinin reduces bleeding but does not appear to increase the risk of thrombosis. Therefore this complication is probably no more common than baseline risk.
Contamination from use of multi-dose vial	This risk is very low but potentially present if needles are ever reused. Obviously needles should be single-use and ideally vials should be single-use as well
BSE	This risk is so low as to not be calculable and is not included in the Bayer product information warnings as of 2004.

## References

- Alfredson H, Lorentzon R, Backman S et al. cDNA-arrays and real time quantitative PCR techniques in the investigation of chronic human Achilles tendinopathy. *J Orthop Res* 2003;21:970-5.
- Alfredson H, Ohberg L. Neovascularisation in chronic painful patellar tendinosis-promising results after sclerosing neovessels outside the tendon challenge the need for surgery. *Knee Surg Sports Traumatol Arthrosc* 2005;13:74-80.
- Alfredson H, Pietila T, Jonsson P et al. Heavy-Load eccentric calf-muscle training for the treatment of chronic Achilles tendinosis. *Am J Sports Med* 1998;26:360-6.
- Apeler H, Peters J, Schroder W et al. Expression, purification, biochemical and pharmacological characterization of a recombinant aprotinin variant. *Arzneimittelforschung* 2004;54:483-97.
- Aubin F, Javaudin L, Rochcongar P. Case report of aprotinin in Achilles tendinopathies with athletes (French). *Journal de Pharmacie Clinique* 1997;16:270-73.
- Beierlein W, Scheule A, Dietrich W et al. Forty years of clinical aprotinin use: a review of 124 hypersensitivity reactions. *Annals of Thoracic Surgery* 2005;79:741-8.
- Bojanov G, Belani K. Aprotinin - an update for the perioperative physician. *Annals of Cardiothoracic anaesthesia* 2005;8:75-80.
- Capasso G, Maffulli N, Testa V et al. Preliminary results with peritendinous pectase inhibitor injections in the management of Achilles tendinitis. *J Sports Traumatol Rel Res* 1993;15:37-40.
- Capasso G, Testa V, Maffulli N et al. Aprotinin, corticosteroids and normosaline in the management of patellar tendinopathy in athletes: a prospective randomized study. *Sports Exercise and Injury* 1997;3:111-5.
- Cederholm-Williams S. Fibrin glue [letter]. *BMJ* 1994;308:1570.
- Chu S, Yang S, Lue K et al. Regulation of gelatinases expression by cytokines, endotoxin, and pharmacological agents in the human osteoarthritic knee. *Connective Tissue Research* 2005;45:142-50.
- Cook J, Khan K. What is the most appropriate treatment for patellar tendinopathy? In MacAuley D, Best T eds. *Evidence-based Sports Medicine*. London: BMJ Books, 2002:422-42.
- Dietrich W, Spath P, Zuhlsdorf M et al. Anaphylactic reactions to aprotinin reexposure in cardiac surgery. *Anesthesiology* 2001;95:64-71.
- Dollery C. *Therapeutic drugs*. Edinburgh: Churchill Livingstone, 1991.
- Druce J, Locarnini S, Birch C. Isolation of HIV-1 from experimentally contaminated multidose local anaesthetic vials. *Med J Aust* 1995;162:513-5.
- Fu S, Chan B, Wang W et al. Increased expression of matrix metalloproteinase 1 (MMP1) in 11 patients with patellar tendinosis. *Acta Orthop Scand* 2002;73:658-62.
- Genety J, Pernin E. Utilisation du Zymofren dans le traitement des tendinites chez le sportif. *Cahiers Med Lyon* 1971;47:135-9.
- Geudj E. La tendinite achilleenne chez jeune sportif. [MD thesis]. Lyon, 1973.
- Golker C, Whiteman M, Gugel K et al. Reduction of the infectivity of scrapie agent as a model for BSE in the manufacturing process of Trasylol®. *Biologicals* 1996;24:103-11.
- Ireland D, Harrall R, Curry V et al. Multiple changes in gene expression in chronic human Achilles tendinopathy. *Matrix Biology* 2001;20:159-69.
- Khan M, Li Z, Wang J. Repeated exposure of tendon to prostaglandin-E2 leads to localized tendon degeneration. *Clin J Sport Med* 2005;15:27-33.
- Komurcu M, Akkus O, Basbozkurt M et al. Reduction of restrictive adhesions by local aprotinin application and primary sheath repair in surgically traumatized flexor tendons of the rabbit. *J Hand Surg [Am]* 1997;22:826-32.
- Lee E, Vaughan D, Parikh S et al. Regulation of matrix metalloproteinases and plasminogen activator inhibitor-1 synthesis by plasminogen in cultured human vascular smooth muscle cells. *Circulation Research* 1996;78:44-9.
- Lo I, Marchuk L, Hollinshead R et al. Matrix metalloproteinase and tissue inhibitor of matrix metalloproteinase mRNA levels are specifically altered in torn rotator cuff tendons. *American Journal of Sports Medicine* 2004;32:1223-9.
- Maffulli N, Testa V, Capasso G et al. Calcific insertional Achilles tendinopathy. Reattachment with bone anchors. *American Journal of Sports Medicine* 2004;32:174-82.
- McLauchlan G, Handoll H. Interventions for treating acute and chronic Achilles tendinitis. *The Cochrane Database of Systematic Reviews* 2001:CD000232.
- Orchard J. Tendon injections: does it matter what you use? *Sport Health* 2003;21 (3):25-7.
- Paoloni J, Appleyard R, Nelson J et al. Topical glyceryl trinitrate treatment of chronic noninsertional achilles tendinopathy. A randomized, double-blind, placebo-controlled trial. *J Bone Joint Surg Am* 2004;86A:916-22.
- Paoloni J, Appleyard R, Nelson J et al. Topical nitric oxide application in the treatment of chronic extensor tendinosis at the elbow: a randomized, double-blinded, placebo-controlled clinical trial. *Am J Sports Med* 2003;31:915-20.
- Roos E, Engstrom M, Lagerquist A et al. Clinical improvement after 6 weeks of eccentric exercise in patients with mid-portion Achilles tendinopathy -- a randomized trial with 1-year follow-up. *Scand J Med Sci Sports* 2004;14:286-95.
- Santini A, Frostick S. How should you treat tennis elbow? In MacAuley D, Best T eds. *Evidence-based Sports Medicine*. London: BMJ Books, 2002:351-67.
- Shrier I, Matheson G, Kohl H. Achilles tendonitis: are corticosteroid injections useful or harmful? *Clin J Sport Med* 1996;6:218-9.
- Speed C. Corticosteroid injections in tendon lesions. *British Medical Journal* 2001;323:382-6.
- Tumber A, Papaioannou S, Breckon J et al. The effects of serine proteinase inhibitors on bone resorption in vitro. *Journal of Endocrinology* 2003;178:437-47.
- van der Windt D, Koes B. Are corticosteroid injections as effective as physiotherapy for the treatment of a painful shoulder? In MacAuley D, Best T eds. *Evidence-based Sports Medicine*. London: BMJ Books, 2002:289-317.



# Comings, Goings, Happenings

First, an apology to **Dr Ken Maguire** who points out that our report in the Autumn issue that Peter Fricker was the first Medical Officer at the AIS is incorrect. In fact, he and Dr Richard Telford were the inaugural Medical and Science Coordinators at the AIS. "It was with great pleasure," he says, "that I was able to appoint Peter Fricker as a Medical Officer to the Institute of Sport in 1983."

Our apologies to Dr Maguire. Our only excuse is that we were quoting from the official ASC announcement.

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**Peter Hamer**, President of the Western Australia branch of SMA and previously in the Department of Human Movement and Exercise Science at The University of Western Australia, has been appointed Professor of Physiotherapy and Head of the School of Physiotherapy in the College of Health at the Fremantle campus of the University of Notre Dame.

News for those who leave reading Sport Health inserts until last.

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**Kate Reakes** has started in the SMA NSW office as the NSW Smartplay Project Officer. Kate will be responsible for implementing the Smartplay program in New South Wales.

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**Dean Dudley**, SMA National Education Manager, was one of the 4 authors (and led the editorial panel) on a national award-winning publication – *SLSA: First aid and emergency care* – produced for Surf Life Saving Australia.

The book won in the TAFE and Vocational Education 'Single Title' category of the Australian Award for

Excellence in Educational Publishing, which were established in 1994 by the Australian Publishers Association and The University of Sydney's Teaching Resources and Textbooks Research Unit to help improve the quality of education material in Australia.

These awards are judged for clarity of writing, pedagogical implications, illustrations, special features and characteristics, quality of subject matter, innovation and flair.

\*\*\*

Two new offerings for the bookshelf:

*Aspects of Sport Governance.*

Edited by D Kulka, W Stier Jnr, and G Schilling. Volume 5 in the Multidisciplinary Series of Physical Education and Sport Science published by the ICSSPE. ISBN 1-84126-132-7,

*Sports Science Handbook: The essential guide to kinesiology, sport and exercise science.* An "encyclopedic dictionary" by Simon Jenkins, previously at Pepperdine University in the US and now at the University of Bath in the UK. Publisher: Multi-Science Publishing. Vol 1 ISBN 0906522-366. Vol 2 ISBN 0906522-374.

\*\*\*

Hopscotch, the independent film distributor, has given free double passes to SMA members to **Murderball**, the film about the US Quadriplegic Rugby team at Athens which has created much excitement around the US already and which won the Audience Award at this year's Sundance Festival.

Murderball opens in Australia on 15 September. The free tickets are inserted in this issue of Sport Health. Check [www.murderballmovie.com](http://www.murderballmovie.com) for more details.

## Kind and gentle does it

A recent survey of health clubs in the US shows how a significant increase in older members is turning over the fitness industry there. The survey was conducted last January by American Sports Data Inc. More details at [www.americansportsdata.com](http://www.americansportsdata.com).

There are more than 41 million health club members in the US and 25% of them are aged over 55. A result is the growth of so-called "kind and gentle" forms of exercise that can be seen in this table.

At the same time and on the other hand, another study (this time by the US Agency for Healthcare Research and Quality) shows an even more interesting spurt in the numbers of Americans who can't or won't go the exercise route to fitness, however kind and gentle:

- the number undergoing weight-loss surgery more than quadrupled between 1998 and 2002 •
- the number doing so aged between 55 and 64 increased 900% between 1998 and 2002.

More details in 'Use and costs of bariatric surgery and prescription weight loss medications' in Health Affairs, 12/7/05.



# Overuse injuries in mountain biking

Mountain bikers can present with varying injuries, mainly because there are a variety of mountain biking disciplines. The two main disciplines are cross country (riding up and down hills) and downhill (as the name suggests, just downhill). This article will focus on cross country.

Mountain Bike (MTB) cross country is a skill based discipline, where riders compete on an outdoor track over more than two hours of riding.

MTB cross country riders are the most likely of all the mountain bike riders to present to physiotherapists with overuse injuries. This is primarily because of the distance covered in training and racing. Acute injuries can occur (eg, following a fall, muscle tear in a biomechanically compromised area, technique error (exploding into a sharp ascent in the wrong gear: either too high or too low).

## Technique

Common mistakes in pedal technique cause significant overuse injuries. Essentially, pulling up on the pedal can reduce efficiency and lead to overuse injuries. Cleats actually hold the foot in place to optimise power output at high cadence. They should not be used to help the upstroke (in steady state cycling). Pulling up is required in certain short term situations -- explosive sprints, take-offs -- where efficiency is compromised for total power output. Pulling up can stress the hamstrings and hip flexors unnaturally, and destabilise the pelvis and lumbar spine.

With mountain biking there are other components to efficiency that revolve around bike handling skills. The mountain biker needs to be able to use speed and momentum; the arms and legs are an integral part of the

suspension system of the bicycle. The fittest cyclist does not always win a race. Therefore, for an injured rider, skill work could be part of the rehabilitation process.

## Equipment

Equipment is an important consideration when managing injury. Here are some examples:

### Suspension

All mountain bikes have front suspension. This improves the bike handling and also softens the stress on the upper limbs. If a patient is presenting with upper limb problems, it's worth taking a look at the suspension. Place your weight on the handlebars and push up and down. Does the suspension move? Does it move far enough for the weight of the patient? If the physiotherapist is light and the patient heavy, and you can easily push the suspension down, there is a good chance it is not adequate to dampen forces to the upper limbs. If the suspension is too rigid, increased stress may occur.

### Brakes

The advent of hydraulic disc brakes as a very efficient system can be set up to enable the index finger to solely control the brake. This lessens the strain on the forearm muscles and reduces the chance of upper limb overuse injury. Brake levers can be altered to apply braking tension either near to the bars or far away from the bars. Setting the levers to brake close to the bars makes sense for small hands. In other words, the effective pull is not until long finger flexors are at optimal length tension.

### Gears

Most gear shifting is 'trigger', either thumb lever, finger lever or a combination. There is also a 'grip shift'. Any patients who have had a thumb injury will love the grip shift as they often do not have the strength and power in their thumbs to shift a trigger shifter.

### Cranks

This is a big problem with the mountain bike industry. Many mountain bikes come with 175 cranks regardless of the bike size. Cranks come in three main sizes: 170, 172.5 and 175 millimetres. Smaller riders -- say, around 166 centimetres tall or less -- should be on 170 cranks (or smaller for very short riders). Riding long cranks for a small cyclist will strain the knees and possibly hips and back.

## Set-up

There are many different 'methods' to determine the 'correct set-up'. There are absolute parameters that you can't go beyond, but there is still a lot of flexibility within those parameters. Measure inseam and trochanteric height as part of a patient set-up. However, in the end, it is what looks right that determines set-up.

For the physiotherapist in practice, the best thing to do is to get the bike on a wind-trainer and make sure the front wheel is propped up to get the bike level. Then, allow the patient to warm up a bit. Check the seat height by getting the patient to put the leg at the furthest extension of pedal stroke (in line with the seat tube). At this position get the knee extended and the ankle at 90 degrees. The patient should be able to achieve this on each side without any tilt of the pelvis.

To check seat fore-aft, get the patient to take the crank to the horizontal position and get the foot in a neutral position, mimicking the natural last of the shoe and measure from the opposite side of the bike; ie, from the inside of the leg. Drop a plumb bolt down from front of the tibia where the tibial tuberosity comes off the tibia. This plumb bolt should bisect the pedal axis or go behind it. (The plumb bolt should never be in front of the pedal axis as it will strain the patello femoral joint (PFJ)).

Test the rider's reach last, as the rear part of the bike must be right before moving to reach. There is no measure for reach. It is composed of the length of the top-tube, the length of the stem and also the drop between the saddle and the bars. The cyclist will need a combination of mobility and stability to attain reach. Reach should look as though it allows the cyclist to reach the bars with a slightly anteriorly tilted pelvis, flattish back, retracted scapulae, relaxed shoulders and unlocked elbows and mid-position wrists.

## Flexibility

Flexibility is very important in a general sense as mountain bikers are repetitious workers who need to stretch many of the opposing motions to the ones that they do all day on the bike. Stretches can be placed into three main groups:

**Power generators:** gluteus maximus, quadriceps, gastrocnemius.

**Position holders:** anterior pelvic tilt, hamstrings, thoracic and lumbar extension, hip flexion, iliotibial band (ITB).

**Contracture prone regions:** pectorals, upper limb neural, lumbar extension, hip extension.

The power generators are best stretched probably post exercise after exertion, the position holders are best stretched just prior to cycling to improve posture on the bike and the contracture prone regions are just stretched when convenient as part of a routine.

Three useful points:

1. use a foam roller on the ITB,
2. get creative with hamstrings. (Have the cyclist bend over and lean on to a bench and stretch him/her via anteriorly tilting the pelvis. This assimilates the flexibility requirement on the bike), and
3. remember the hips always. Get the cyclist stretching the gluteals in all different directions all the time. The secret to good motion of pedal stroke is free and mobile hip motion. Always check the hip joints for any cyclist presenting with knee pain.

## Strength

### Core

Assess by observing pelvic and lumbar motion during pedalling. The spine and pelvis should remain fairly stable while the legs move up and down. If the rider cannot do this, the following could be occurring:

the erector spinae may not hold him/her horizontal while putting pressure on the pedals

riders may have a mobile pelvis and poor transversus abdominis (TA) recruitment

riders may have poor limb dissociation so that, when they move their legs, the rest of the body moves with it

their pelvic-femoral control may be poor, causing their legs to rock around with the pelvis counterbalancing each pedal stroke.

All core exercises for the cyclist should mimic the on-bike position as much as possible. So, get the pelvis anteriorly tilted with single leg stance work. Get the back flat and be inventive about facilitating the desired component of stability you are trying to achieve.

### Upper limb

Mountain biking is extremely fatiguing on the arms. Upper body work contributes to the overall stability of the body, when on the bike. Try to focus on postural muscles that don't get a lot of work in activities of daily life; ie, retractors, external rotators, posterior deltoid, lat dorsi and triceps.

This may help avoid upper limb, neck and shoulder problems and probably makes you tougher and more resilient when you go over the bars.

### Lower limb

The gluteals are important for cycling. They can contribute to up to 30 per cent of the power of the pedal stroke. If the gluts are not functioning, the vastus lateralis and even the gastrocnemius on that side will do extra work. Leg press work, ensuring the gluteals are switched on at the top of each push, is relevant. Weighted squats can be a useful strength and power exercise for the cyclist. Care must be given with technique, in particular switching on the TA prior to loading (not bearing down), activating the gluteals and the vastus medialis obliquus (VMO) and then being smooth with the push. Care must be taken to assess the level of fatigue when doing very low reps; say, three repetitions maximum.

## Conclusion

Assessing overuse injuries in the sport of mountain biking is just like any other sport. Listen to what the patient has to tell you and get reasonable and analytical about possible causative factors. Always try and keep them on the bike to avoid deconditioning and sort out the source of irritation as soon as possible.

*(This article was first published in SportsLink, the official quarterly magazine of Sports Physiotherapy Australia. To subscribe to the magazine, email [spa@physiotherapy.asn.au](mailto:spa@physiotherapy.asn.au). For more information about physiotherapy, or to find a physio, go to the Australian Physiotherapy Australia website [www.physiotherapy.asn.au](http://www.physiotherapy.asn.au).)*

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