

be active 2012

**Highlights,
award winners,
photos plus more**

Platelet-rich plasma

Biotechnology
of the future
practised today

Reflections of the 2012 London Olympics

A medical perspective

- Hamstring injuries and interchange usage
- The 'war on drugs in sport'
- How the 'exercise pill' can improve health
- A case study of surf lifesavers
- Lessons learnt from the NoGAPS exercise training program
- Tracking injuries in community sport

Elastoplast

Sport 
Supporting your Passion

Prevention is better than cure so protect yourself against injury with the Elastoplast Sport range of sports medicine products. Exclusively used by The Australian Institute of Sport and many other elite sports clubs across Australia and New Zealand.

- Rigid Strapping Tapes
- Mouthguards
- Elastic Adhesive Bandages
- Hot/Cold Packs

For all your Sports Medicine needs.
Available from pharmacy, sports medicine wholesalers and supermarkets.

OFFICIAL SUPPLIER



AUSTRALIAN
INSTITUTE OF SPORT



MAJOR SPONSOR

SPORTS
MEDICINE
AUSTRALIA

SAFER SPORT PROGRAMME



Official Supplier of the
Australian Netball Team



BDF ●●●●●
Beiersdorf

OFFICIAL SUPPLIER OF TAPES,
BANDAGES & WOUND CARE
PRODUCTS TO THE 2012
AUSTRALIAN OLYMPIC TEAM

Elastoplast®

www.elastoplastsport.com

Customer Service: 1800 269 933 toll free

Always read the label. Use only as directed. If symptoms persist see your healthcare practitioner. © = Reg. tm. Beiersdorf AG

Sport 
Supporting your Passion

Opinions expressed throughout this magazine are the contributors' own and do not necessarily reflect the views or policy of Sports Medicine Australia (SMA). Members and readers are advised that SMA cannot be held responsible for the accuracy of statements made in advertisements nor the quality or the goods or services advertised. All materials copyright. On acceptance of an article for publication, copyright passes to the publisher.

Publisher

Sports Medicine Australia
PO Box 78 Mitchell ACT 2911
sma.org.au

Circulation: 4000

ISSN No. 1032-5662

Editor

John Orchard

Managing Editor

Amanda Boshier

Chief Executive Officer

Nello Marino

Subscription Manager

Brigid Doherty

Advertising Manager

Amanda Boshier

Design/Typesetting

Papercut

SMA STATE BRANCHES

Australian Capital Territory

ACT Sports House
100 Maitland St Hackett ACT 2602
T (02) 6247 5115

New South Wales

PO Box 3176 Rhodes NSW 2138
T (02) 8116 9815

Northern Territory

PO Box 2331 Darwin NT 0801
T (08) 8981 5362

Queensland

Sports House 150 Caxton St Milton QLD 4064
T (07) 3367 2700

South Australia

PO Box 219 Brooklyn Park SA 5025
T (08) 8234 6369

Victoria & Tasmania

Sports House
375 Albert Road Albert Park VIC 3206
T (03) 9674 8777

Western Australia

PO Box 57 Claremont WA 6010
T (08) 9285 8033

SUBSCRIPTION RATES

Australia A\$40

Overseas A\$60

SMA members receive *Sport Health* as part of their membership fee

Single copies and back copies A\$15 (includes postage)

PP No. 226480/00028

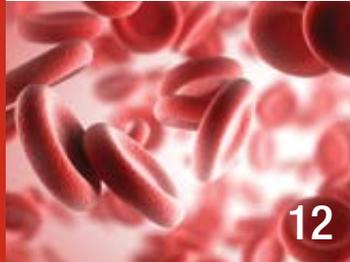
For subscriptions contact

T (02) 8116 9815

E members@sma.org.au

Cover photograph – www.istockphoto.com

Content photographs – www.istockphoto.com, Harvie Allison.



Knowledge speaks, but wisdom listens	2
SMA's role as a facilitator of knowledge exchange. Nello Marino	
5 minutes with... Dr David Bolzonello, Sports Physician and 2012 Certificate of Appreciation recipient	4
Thinking as practitioners and scientists	7
How our brain takes shortcuts to explain the world of sport and sports medicine. Dr J	
Platelet-rich plasma	12
A biotechnology of the future being practised today. Dr Julien Freitag	
Reflections on the 2012 London Olympics	19
Dr Peter Baquie, Ruth Anderson, Brent Kirkbride, Professor Louise Burke, Mark Osborne, Georgette Stephens	
The keys to business success	37
Business insights to help enhance your business. Papercut, Davidsons, Social Star	
Lessons learnt from implementing FootyFirst in 2012	40
An update on efforts to support the uptake of the NoGAPS exercise training program. Alex Donaldson	
Tracking injuries in community sport	42
A look at the NoGAPS project field-testing SMA's injury monitoring system. Christina Ekegren	
be active 2012 conference recap	44
The speed-fatigue trade off in hamstring aetiology: analysis of 2011 AFL injury data	53
The relationship between hamstring injuries and interchange usage. Dr John Orchard, Dr Hugh Seward, Jessica Orchard, Associate Professor Tim Driscoll	
Alternatives to prohibition	58
Will the 'war on drugs in sport' fail in the same way as the prohibition led 'war on drugs'? Dr Jason Mazanov	
The exercise pill	63
How accredited exercise physiologists and exercise scientists can improve our health. Dr Ian Gillam	
The sport of saving lives	72
A case study of surf lifesavers from an APA Musculoskeletal Physiotherapist. Troy Eady	
Discipline group news and events	77
Journal of Science and Medicine in Sport	80

Knowledge speaks, but wisdom listens



Nello Marino (right) with Professor Karim Khan, Editor of the *British Journal of Sports Medicine* (BJSM) recently announced online access to BJSM for all SMA Professional Members.

If you have a worthy cause or issue related to sports medicine or physical activity that you would like promoted in *Sport Health*, email nello.marino@sma.org.au

SMA CEO, Nello Marino highlights SMA's role as a facilitator of knowledge exchange.

Jimi Hendrix is probably the last person you'd expect to be quoted in a *Sport Health* article. With the fear of taking his quote out of context, he once stated, 'Knowledge speaks, but wisdom listens'. Quite prophetic for one better known as a master of the guitar. Based on this, SMA has been doing a lot of 'speaking' lately.

The most recent and highly successful 'be active' conference has prompted reflection of SMA in its capacity as a facilitator of knowledge exchange. This is particularly pertinent as SMA has just hosted one of the **largest** ever 'be active' conferences with 1,300 delegates attending over four days in Sydney, showcasing some of the cream of physical activity, sports medicine, sport science and sports injury prevention researchers and practitioners. Delegates shared in over 1,000 presentations through the three incorporated conferences and we look forward to enabling members and other interested delegates online access to a number of these presentations shortly at www.sma.org.au.

"SMA is delighted to have recently announced online access to BJSM for all SMA Professional Members..."

The words knowledge and excellence feature prominently in SMA's core values. As an organisation we are committed to science and research to ensure our policies, and the practices of our members are reflective of best practice and available evidence.

Some of SMA's key roles in this sphere are to support the expansion of the evidence base, to make research accessible to the broader industry and the membership, and to translate research through policies, position papers and resources as a means of guiding community practice.

Over many years SMA has played a role in the direct and indirect support of research. More recently the initiation of a Research Foundation to assist emerging researchers is a demonstration of this. Now in its third year, the SMA Research Foundation continues to gather momentum with several small grants (up to \$2,000) being offered to advance sports medicine and sport science. The recipients of these will be announced shortly.

This goes hand in hand with the great results that have been achieved by the *Journal of Science and Medicine in Sport* (JSAMS). Now ranked eighth in the sports medicine and science category and with an impact factor over '3' for the first time in its history, JSAMS has made huge strides in recent years under the editorship of devoted SMA Members Professor Gregory Kolt, and his preceding Editor, Professor Caroline Finch. We look forward to new and exciting initiatives in the coming twelve months which will provide additional opportunities for interaction with JSAMS and some of the great research it exhibits.

"Jimi Hendrix... once stated, 'Knowledge speaks, but wisdom listens'."

Immediately following be active 2012 and fresh from his exceptionally well received Refshauge lecture, Professor Karim Khan travelled to Perth to share an evening with a number of sports medicine practitioners as part of a national road show facilitated by SMA. WA seemed like an obvious place to start to enable the Perth sports medicine community, many of whom were unable to attend be active 2012, to share in the spoils of one of Australia's most admired sports medicine 'rock stars'. This will be the first of a number of capital city evenings in

which Professor Khan will feature in early 2013, all under the SMA banner. Keep an eye out for these dates coming soon.

Whilst Karim has been a long time member and supporter of SMA, he is more recently known for his work as Editor of the *British Journal of Sports Medicine* (BJSM) and of course co-author of *Clinical Sports Medicine*. Professor Khan and his team have elevated the BJSM to the fourth ranked journal in the sports medicine and science category. SMA is delighted to have recently announced online access to BJSM for all SMA Professional Members as a further benefit associated with SMA membership. Both JSAMS and BJSM access alone far exceed the monetary cost of SMA membership and the availability of these further reinforce SMA's commitment to the promotion of and access to quality sports medicine and science research.

Couple this with additional member services such as MedInfoNow which enables access to thousands of abstracts for free and it's apparent that SMA's knowledge value is being well supported through our services to members.

It's now up to the members to finish the Jimi Hendrix 'loop' and 'listen' to the knowledge that is being offered through the wide range of knowledge sources.

Nello Marino

Chief Executive Officer
Sports Medicine Australia
nello.marino@sma.org.au



Follow SMA CEO Nello Marino on Twitter @smaceo

SMA is glad to announce the launch of the be active 2012 blog. THE place to keep informed of all things be active 2012.
<http://beactiveblog.com> – October 17, 2012

SMA TAS Members: special discount for Anatomy W/shop, Hobart 23/11. Members only enrolment ends 19/10
<http://ow.ly/1ORNxp> #sportsmedicine – October 12, 2012

Is PT the way to go to keep our kids healthy?? Seems to be a growing trend: <http://bit.ly/Piki5J> #sportsmedicine – October 8, 2012

How to understand your Twitter followers: <http://knowyourfollowers.com?t=42296> – shows you location, gender, jobs and interests. #KnowYourFollowers – October 4, 2012

Want to attend An Evening with Karim Khan? Editor BJSM & coauthor Clinical Sports Med, Perth Nov 6. Seats limited.
<http://tinyurl.com/8njz3uw> – October 2, 2012

Spring into exercise safely & increase exercise gradually. SMA article: <http://ow.ly/1Ouy3m> #sportsmedicine – September 7, 2012

Women need more support if they're to embrace sport
<http://tinyurl.com/9zg7xrc> #sportsmedicine – September 1, 2012

The current issue of JSAMS is available to view online:
<http://www.jsams.org/current> #SMAMedia – August 27, 2012

It's a no brainer – sports clubs urged to know concussion signs – Brain Injury Awareness Week <http://bit.ly/PohT4E> #SMAMedia – August 15, 2012

Hip seniors who bust a move less likely to break a bone: JSAMS study <http://ow.ly/1OpjY> #sportsmedicine – August 8, 2012

5 mins with... Dr David Bolzonello

Sports Physician and 2012 Certificate of Appreciation recipient



Dr David Bolzonello (left) with Tasmanian Director, National Board, Tim Pain.

What is your profession?

Sport and Exercise Medicine Physician.

How many years have you been in this profession?

25 years.

Where do you work?

In Melbourne at Alphington Sports Medicine clinic. I am also a Medical Advisor for Worksafe and the Transport Accident Commission (TAC) in Victoria and the Consultant Physician for the AFL Victoria Academy Program and a team Physician for the Calder Cannons Football Club in the TAC Cup competition.

What does your typical day consist of?

A mixture of consulting work for Worksafe and TAC; the clinic to see patients; meetings around the AFL Vic Academy; as well as attending training and games on weekends. I also do a small amount of orthopaedic surgical assisting.

What is your favourite aspect of your job?

Seeing satisfied patients who I have helped achieve their goals, be that return to sport, or their chosen activity, and to help the patient with a chronic or long term condition be able to effectively maximise their function.

What has been the highlight of your career?

Being part of a group of highly motivated people who have the vision of best practice management at my clinic as well as the various sports teams I have worked with.

In terms of sport it was being part of the Carlton Football Club's Premiership in 1987 and the first Australian Open Tennis Final at the new Tennis centre at Melbourne Park with the five set Cash/Wilander final.

When, why and how did you become involved with SMA?

When I first started to work in sport I realised I did not have the skills needed straight out of undergraduate study and hospital residency. SMA workshops, courses and conferences met this need. The training I received was important in my eventual acceptance for eligibility to sit Fellowship exams in the Australasian College of Sports Physicians.

Can you tell us a little bit about your recent nomination and receivership of the 2012 Certificate of Appreciation?

A pleasant surprise that I was very grateful to receive. The fact that this came via nomination by peers and work colleagues within SMA is humbling and a nice reward for my contribution (which has been no effort at all, as I feel that without SMA I would not be in the position professionally that I am in now!)

What are you passionate about?

Lots of things! (I am Italian by birth and culture) – Family, work, the Carlton Football Club, good wine, good food and good friends. The lack of effort or long term vision in people who have had the privilege of a good education and upbringing but who do not give something back to society also gets me fired up.

What's the best piece of advice anyone has ever given you?

The next patient you see will be the most important person you will meet!

Name four people, living or not, you would invite for a dinner party and why?

Silvio Berlusconi: To ask him why?

Leonardo Da Vinci: To learn how to think better.

Winston Churchill: To learn how he kept going when things got really tough.

Hillary Clinton: She would have as good an insight as anyone into American life and politics.

Favourites

Travel destination: Italy/Europe.

Sport to play/watch: AFL (watch), soccer (play).

Cuisine: Love anything that is good but bias to Italian.

Movie: To Rome with Love.

TV Program: 2 Greedy Italians SBS.

Song: When the Levee Breaks by Led Zeppelin.

Book: Any of the Donna Leon books set in Venice.

Gadget: My Alfa Romeo.



ARE YOU TAKING FULL ADVANTAGE OF YOUR SMA MEMBERSHIP?



“My career in sports medicine has been significantly **ENHANCED** by the great **KNOWLEDGE, NETWORKING** and professional **SUPPORT** that **SMA** provides.”

*Trish Wisbey-Roth, SMA Member
Olympic and Specialist Physiotherapist, Bounce Back*

- **SMA membership BUILDS YOUR CAREER** through discounted professional development opportunities, research support and awards, access to online scientific journals and informed advice from SMA members.

- **SMA membership KEEPS YOU INFORMED** of the latest industry news via *Sport Health* magazine, the *Journal of Science and Medicine in Sport* and the SMA Member e-news.

- **SMA membership PROVIDES YOU WITH NETWORKING OPPORTUNITIES** and maximises interdisciplinary referral and information exchange opportunities by being an active participant at many of the industry's finest conferences/events.

- **SMA membership MAXIMISES YOUR EXPOSURE** through the SMA online Member Directory and other advertising opportunities.

- **SMA membership PROTECTS YOUR INTERESTS AND FUTURE** by supporting the industry's peak multidisciplinary body. SMA lobbies government, provides representation and advice, develops policies and guidelines and actively promotes the industry in the media.

- **SMA membership SAVES YOU MONEY** by offering the Member Benefits program, discounted education opportunities and many useful resources.



**To make the most of your SMA membership visit
sma.org.au**

Thinking as practitioners and scientists



Dr J recounts his recent reading of *Thinking Fast and Slow* and draws comparisons to how our brain takes shortcuts to explain the world of sport and sports medicine.

I have recently read the book *Thinking Fast and Slow* by Daniel Kahneman, which summarises work which won him the Nobel Prize for Economics. It is much more a book about human psychology and even neuroscience than about economics. What it reveals about the human brain is fundamental to almost every profession, including medicine. Most of the time as health professionals we are interested to read about our patients, their conditions and what can help explain their symptoms and complaints. It is possible to read *Thinking Fast and Slow* and apply it to one's patients only, but it is more rewarding to read it and apply the logic to one's own thinking. As doctors and health professionals we are also prone to making mistakes based on the way our brains are wired to think and therefore we can learn about our own biases if we fully learn these lessons.

“Sport and sports medicine provide great examples of the way the brain takes shortcuts to explain the outside world...”

One of the fundamentals of the book is that the human brain functions by trying to make meaning of almost everything in the world that we observe. Because there is so much information to process, there is an internal triage process going on in all of our brains. We have to decide whether to make assumptions based on first impressions or to try to think through problems in greater detail. Thinking about an issue in detail takes a lot of effort and therefore – given the amount of information we input – most of the time we actually think ‘fast’, i.e. whatever comes first into our brains, without expending much mental effort onto it. Kahneman uses many examples, which I won't repeat verbatim, but it is easy to replace the original ones with anecdotes from sport and sports medicine which illustrate his points.



“... it is not a normal human reaction to have no reaction.”

Since I'm writing this article during the football finals, an easy topic to start with is the inevitable articles which appear every September about how team 'X' is using some funky new sports medicine or science technique and – wait for it – they have now made the Grand Final. These articles have been around for at least 20 years with the only changes to the format being the new 'cutting edge' program/treatment and which teams happen to be in the Grand Final, *having used* the new technique. The association is impressive to the 'fast' brain. The slow brain approach would be to actually apply science to the so-called scientific technique and ask whether there have been RCTs conducted and what the results of these are. Most people – including scientists working at sporting clubs and those that are fans of clubs – don't have the time and effort available to try to answer the question of whether there is strong scientific evidence to support the new technique. For the fast brain the parameters are simple – the top teams are doing it and therefore the default is that it probably works, with any team failing to follow suit in danger of not being on the cutting edge.

“‘Fast’ brain thinking is somewhat like the placebo effect, in that it persists even if you know about it.”

Science is but one of many areas that 'hooks' onto an association with sporting team success. The market value of coaches is almost completely associated with their *recent* team success. After the 2010 NRL finals, Wayne Bennett, Brian Smith and Tim Sheens were seen as the 'best' coaches in the NRL, having coached the three most successful teams of that year. Now two of them have just been sacked and the third has changed clubs but has seen to have somewhat 'lost his touch' on an overvalued contract, having missed the finals for the first time in 20 years. The situation in the AFL is almost identical with *none* of the four Preliminary finalist coaches from 2010 currently at the club they took to the pointy end of the competition. The question every supporter and board member has for their team's coach is *not* "give me a detailed analysis of your career achievements in coaching" but instead "what have you done for me *lately*?"

Another one of the book's gems is the observation (with stats from psych experiments to back it up) that the human brain does not process small risks very well. If the risk of something good or bad occurring is of the order of, say, anywhere between 1 in 100 and 1 in 10,000, then mentally some people will perceive that it is quite a possibility and others will perceive that it is effectively zero possibility. Whether you perceive the 'somewhat likely' or 'zero' outcome will depend on quick associations of your 'fast' brain as to whether you can easily recall a similar thing having happened. If you are a travelling with a sporting team to the Indian subcontinent, your 'fast' brain can't help itself from being far more worried about the possibility of being killed in a terrorist attack than the possibility of being killed in a motor vehicle accident, even though your 'slow' brain, if it analysed the risks would work out that a car accident was much more likely. Similarly, most people get on a plane with the view that there is effectively a zero chance of plane crash, but for those who think that it is effectively not zero it is a struggle to fly at all. The number of people in the second group spikes whenever there is a major plane crash around the world, even though the risk of plane crashes stays relatively constant.

'Fast' brain thinking is somewhat like the placebo effect, in that it persists even if you know about it. If you are a doctor or scientist you may be even more prone to thinking 'fast' because your brain cannot always analyse things in detail, yet because you are a scientist you will have a self-perception that you are very good at analysing things in detail. Football

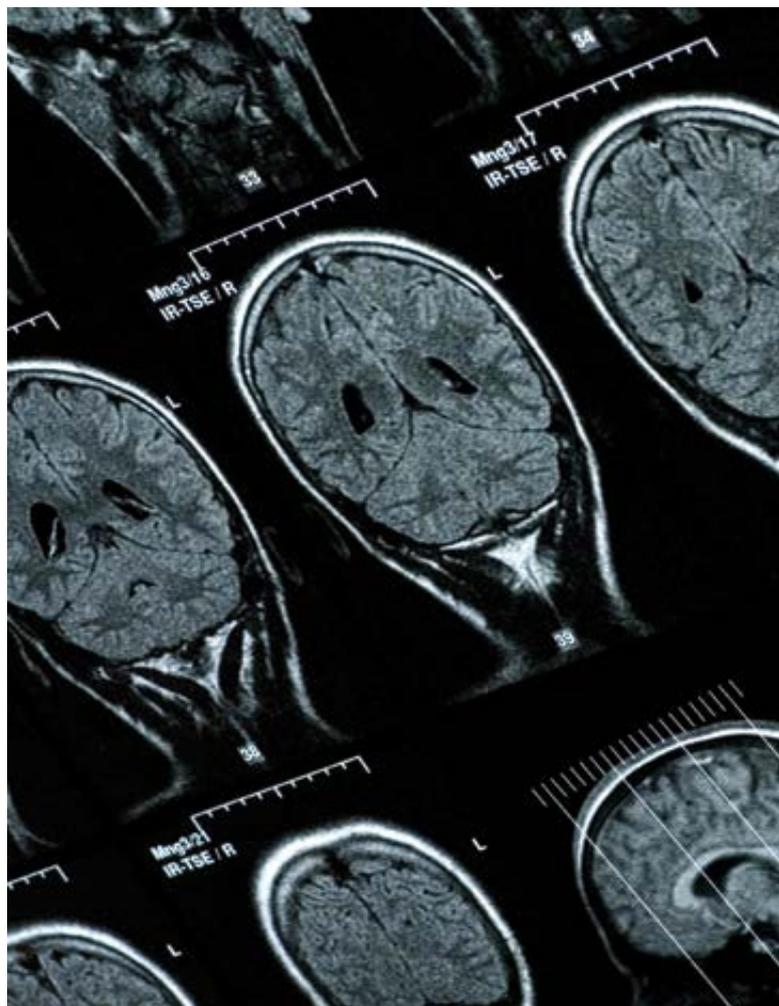
doctors all over the world will passively watch players remain on the field who have shown signs of having had a very 'mild, transient' concussion, yet they will get edgy about it (and maybe even demand players come off the field) the more they read articles about the potential for long-term brain damage from 'mild, transient' concussions. The potential for long-term damage from a low-grade head injury which seems to quickly abate fits into the category of risks that as professionals we either process as highly risky (in which case the player *must* come off) or virtually zero (in which case he is safe to stay on). Coaches and players almost universally fall into the 'virtually zero' camp and don't generally understand what the fuss is about.

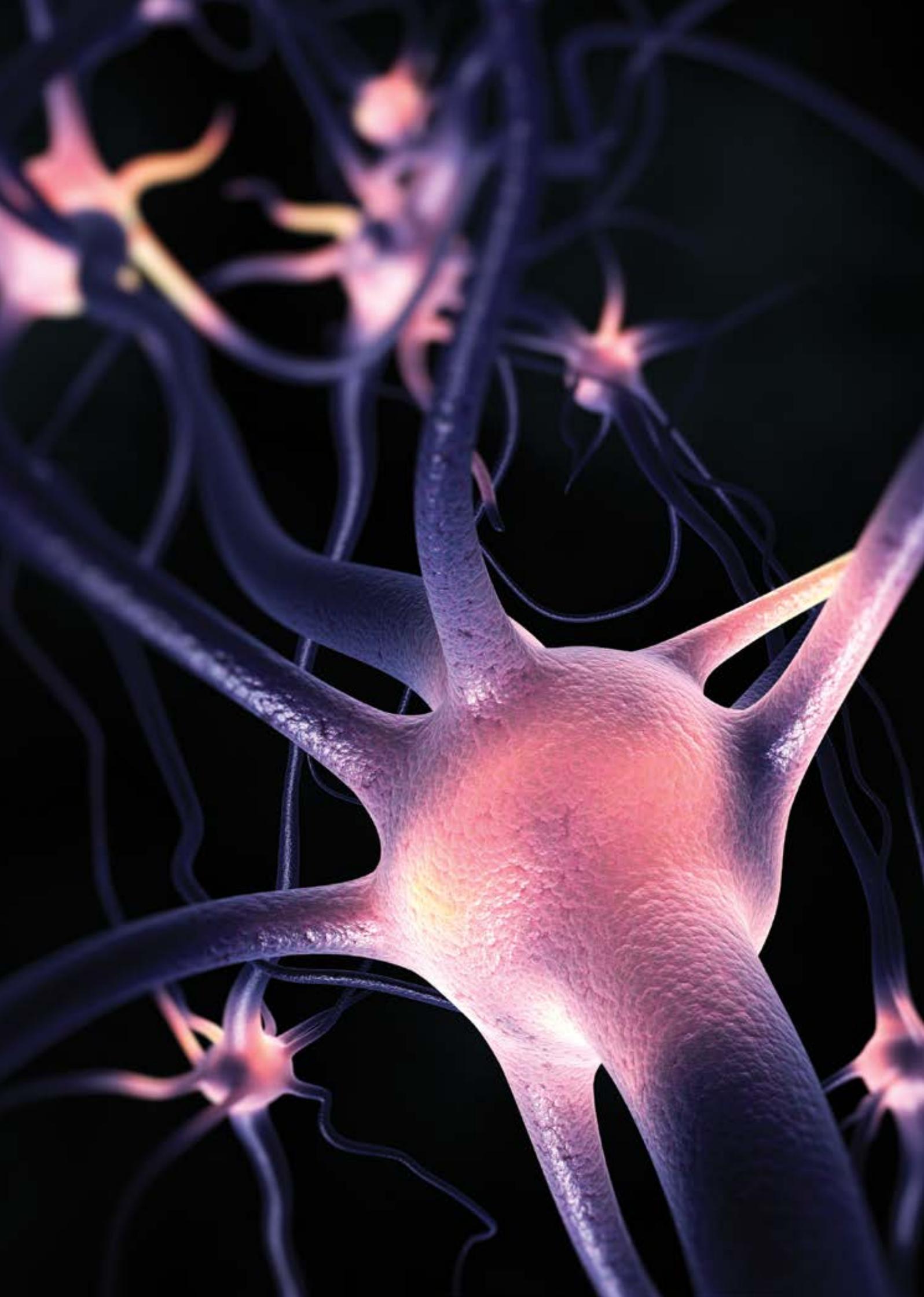
“The human brain will tend to want to make a connection between events that may not be related.”

A further illustration that scientists also have a tendency to lazy fast thinking (as much as the general population) is the response that most of us will have to the statement in a paper ' $P < 0.05$ '. Most of us equate this with 'significant association' and even 'true association'. Unless it is a topic of particular interest to you, there is a tendency to pigeon hole $P < 0.05$ and $P > 0.05$ into true and false associations when you are speed reading through an abstract. It takes a lot of work to think through the alternate possibilities (chance, even if $P < 0.05$; low powered study; confounders; study bias etc.).

Let me throw a statement at you; 'since the creation of the NRL in 1998, the Sydney Roosters have conceded significantly more penalties than they have been awarded ($p < 0.05$)'. Even with my warning, your 'fast' thinking system will associate $p < 0.05$ with a true association that needs explaining somehow. If you are not an NRL fan, when confronted with such a statement the most intelligent response would be to say that you had no idea why the Roosters have conceded more penalties than they had received. However it is not a normal human reaction to have no reaction. The natural human reaction is 'the Roosters must be an undisciplined team who don't obey the rules as well as the other teams'. Some Roosters supporters would read the original statement and come up with a whole lot of conspiracy theories as to why the club has tended to be on the wrong end of NRL penalty counts. I can't buy into any theories of 'the refs hate us' but like almost everyone else I have an innate need to explain observations I make. I can throw in another statement which I believe helps shed light on the first; 'since the creation of the NRL in 1998, home teams have won more penalties than away teams ($p < 0.05$)'. This statement would probably be true for all professional

sports by the way, not just the NRL. It is certainly true for the US professional sports, with the phenomenon analysed in the book *Scorecasting* (*Sport Health*, Spring 2011). If you have read this book, then like me, your explanation would probably be that referees are human and, as such, they get slightly influenced by crowds. Over time this is enough to tilt penalty counts the way of home teams (and more so to teams which have the biggest and most vociferous home crowds, playing in coliseum-like stadiums where the noise transfers most to the pitch). However, you are welcome to make your own interpretation. For example those players at home get inspired by the crowd to play with superior technique and keep their aggression in check, with the referee judging both teams equally and objectively. In fact, it is most likely you'll come to this conclusion because your immediate reaction will probably have been that officials are unbiased and whilst they make mistakes they 'even out equally for the home and away teams'.





“What it reveals about the human brain is fundamental to almost every profession, including medicine.”

Whether or not you believe that umpires and referees are more sympathetic to the home team because of crowds, you will appreciate that scrutiny on umpires and referees is higher than it ever was. The football codes have more officials, who are more professional and have greater access to technology than ever before, yet their performance objectively seems to be worse than ever before. Part of this is recall bias (we think of the poor decision from last week as the ‘worst decision ever’ having partially forgotten a shocker from years earlier). However the increasing numbers of slow motion replays changes the goal posts, so to speak. Traditionally officials needed to make decisions within a split second because of the speed of the game. It was up to a single umpire or referee to have a ‘feel’ for the game and make sure both teams got a fair run with respect to decisions, but to make all of them quickly and on the run. With a video refereeing decision, a split second becomes 10-60 seconds with multiple looks at the vision. For the so-called 50/50 decision (or one with any ‘doubt’) it appears to be actually easier to make a decisive ‘yes/no’ call with no time to think about it than to be running over the possible arguments in your head in favour and against whilst watching different replays. As more and more of sport becomes ‘video refereed’ there may be a need to rewrite the rules almost to a point where a robot can adjudicate on a decision. Where the rules are ambiguous, it is agonising for both teams to watch a replay for 30 seconds thinking the decision should go their way (and the resultant ‘toss of the coin’ seems to have a disproportionate effect on momentum for the rest of the game, although perhaps in the spirit of this article I am imagining it!).

Our need to explain as many phenomena as possible extends to scenarios where $n=1$. One of my favourite anecdotes from my sports medicine career is now over 15 years old, but it is still a good one. I was working with the Sydney Swans and our reserve grade team was playing in the 1995 Preliminary Final at the MCG. Because it was only reserve grade, the team was taking an early flight down from Sydney on the day of the game. However, the flight was delayed by four hours because of fog. It only arrived at Tullamarine Airport 30 minutes before the match was due to start. We were provided a police escort and given authority to speed down the freeway. The players had their ankles strapped on the bus and I even gave a player a painkilling needle on the bus on the way to the ground. When we got to the MCG, the players jogged straight out of the bus, ran straight past the change room and onto the ground as the whistle was blown to start the game about 10 minutes late.

Amazingly though, the Swans reserves team managed to kick the first five goals of the match and went onto have a comfortable victory. It meant that the next week we played in the reserve grade Grand Final, again at the MCG. This time, the AFL made sure we came down on the day before to avoid a repeat of the near disaster of the week before. This time we lost the match and ended up being the reserve grade runner-up team for the season. Human psychology is such that it is compelling to think that it was an ‘advantage’ in the Preliminary Final to arrive on the ground with adrenaline running high, ready to ambush a flat opponent that was flat-footed not knowing whether they might win the game by forfeit. It is possible that this is true, but equally (and perhaps more) possible that it had nothing to do with the result and that the Swans team just happened to have a good day. The human brain will tend to want to make a connection between events that may not be related. Whenever a football team has a powerful start to the second half the coach’s half time speech is often given credit when, of course, there has never been any scientific study about the relationship between half-time speech content and performance in the second half.

“The question every supporter and board member has for their team’s coach is *not* “give me a detailed analysis of your career achievements in coaching” but instead “what have you done for me *lately?*”

Sport and sports medicine provide great examples of the way the brain takes shortcuts to explain the outside world, which it must do simply because we have too much information passing by us to examine everything in detail. It is a very valuable experience to learn about the way that everyone’s brain works in this fashion and how it affects our professional lives and those around us. For this reason I strongly recommend *Thinking Fast and Slow*.

Dr J

The opinions expressed in Dr J are the personal opinions of the author.

Platelet-rich plasma



Sports Physician Registrar, Dr Julien Freitag discusses a biotechnology of the future being practiced today.

For over 20 years platelet-rich plasma (PRP) has been safely used in various fields of medicine without knowledge of its true mechanism of action. As our understanding of cellular mechanisms in tissue healing and regeneration has improved there has been a recent renewed focus (particularly within Europe and the United States) on the use of autologous blood products such as PRP in musculoskeletal medicine. Unfortunately whilst it theoretically provides a useful adjunctive therapy to traditional rehabilitation and perhaps is a potential alternative to more invasive surgical options there remains a paucity of clear evidence to support its use.

A sleeping medical community in Australia was perhaps woken from its slumber in 2007 when a desperate AFL team, only weeks from the Grand Final, flew a star midfielder to Europe for treatment on a chronic and recurring hamstring injury. The treatment – a product known as Actovegin. A deproteinised haemodialysate extract from calf blood, Actovegin has been used by doctors across Europe, China and Russia for over 60 years.

“...despite some studies that question the efficacy of PRP, others indicate significant benefits.”

Actovegin has been shown across several therapeutic trials to influence oxygen absorption and utilisation and to exert insulin like activity. It has shown promising benefit in the treatment of dementia, diabetic neuropathy and musculoskeletal injury. It has also anecdotally been used as a performance enhancing substance. Despite the length of time it has been used, there remains a lack of data on its biochemical mechanism of action. This, along with case reports of anaphylaxis and secondary multi-organ failure has meant that its use has not been universally accepted (it is not approved for medical use in many countries including Australia and the US).

Based on our growing awareness of cellular healing mechanisms and the autologous nature of platelet-rich plasma one would expect that PRP would displace therapies such as actovegin and have a real place in the treatment algorithm of musculoskeletal injuries. Unfortunately, lack of data, compounded by differences in ‘recipe’ have meant that PRP is still viewed within an evidence based medical community with deserved skepticism.

“...PRP has become a new therapeutic option in the treatment of tendon injuries that fail to respond to more conventional rehabilitation therapies.”

What is platelet-rich plasma?

Our understanding of the healing mechanism and of tissue regeneration has seen medical treatments shift towards the area of biotechnologies – with a more focused effort on developing ways in which we can assist the body to heal. Autologous platelet-rich plasma is one such medium that has become both widely used and studied as a medium to accelerate tissue healing over a broad area of applications.

Autologous PRP is defined as a volume of the plasma fraction of blood having a platelet concentration above that of baseline. The importance of platelets is due to the growth factors which they actively secrete. Whereby once we only understood platelets as being involved in the coagulation cascade we now appreciate their wider effect on tissue healing.

Several anabolic and trophic factors have now been identified within PRP preparations. Growth factors expressed by platelets include transforming growth factor beta, vascular endothelial growth factor, platelet derived growth factor, and epithelial growth factor. Growth factors expressed by platelets have the ability to influence and direct tissue regeneration through angiogenesis, chemotaxis and cell proliferation and also by their effect on the synthesis of extracellular matrix proteins. Platelets also release cell adhesion molecules such as fibronectin, fibrobrinogen and vitronectin which influence extracellular matrix synthesis and thus connective tissue development/regeneration.

The ability to influence such powerful pathways of healing has seen PRP explored as a therapeutic option in applications such as orthopaedics, sports medicine, maxillo-facial surgery and plastics.

Unfortunately despite its suggested theoretical benefits, platelet-rich plasma has inconclusive evidence to support its use, with some studies indicating significant benefits whilst others showing no change. The problem lies partially in the ‘recipe’.

The PRP recipe

Given the correct equipment a clinician can develop PRP within their own clinic. But not all PRP is created equal and depending upon the chosen ‘recipe’ will have a different cellular and biochemical make-up – and hence a different effect. Unfortunately it is not as simple as choosing a technique that yields the greatest platelets. In this case ‘more is not better’.

Research has indicated that the optimal platelet concentration for healing is ~1 million cells per μl (Marx, 2004). Lower counts may lead to sub-optimal tissue stimulation and higher amounts may in fact have an inhibitory effect. Remember also that within PRP you do not just have platelets. You have an autologous medium that also contains both inflammatory cells and inflammatory mediators/cytokines that play an important role in healing; roles which may be counterproductive or stimulatory to the healing process depending upon what you are using if for and how you direct it.

“With such discrepancy in PRP preparation, how then can you use current literature to assess the efficacy of PRP? The answer is you can’t.”

As a practitioner who uses PRP for treatment of various musculoskeletal conditions the PRP preparation remains a very ‘fluid’ process. The recipe chosen depends upon what structure I am treating and what I hope to achieve. Platelet count, white cell count, anti-inflammatory and pro-inflammatory cytokine content are all variables that can be specifically manipulated to achieve a chosen response.

With such discrepancy in PRP preparation, how then can you use current literature to assess the efficacy of PRP? The answer is you can’t. Papers with poor outcomes lead not to the conclusion that PRP does not work but to the conclusion that the specific chosen PRP recipe and its protocol for use does not work in the studied situation. Another recipe may lead to completely different results. Similarly, if a study shows a positive outcome for the use of PRP, unless you are using the same recipe and protocols you are not guaranteed the same outcome – ‘Oils aint oils’.





Areas of use within sports medicine

Tendinopathy

Tendon injuries account for between 30 per cent to 50 per cent of all musculoskeletal injuries. They cause significant morbidity and activity restriction in not just the elite athletic population but also the recreational athlete and even the more sedentary patient in regards to activities of daily living. As past modalities such as intra-tendinous cortisone injection have now been shown to result in poor long term outcome, PRP has become a new therapeutic option in the treatment of tendon injuries that fail to respond to more conventional rehabilitation therapies.

“...not all PRP is created equal and depending upon the chosen ‘recipe’ will have a different cellular and biochemical make-up – and hence a different effect.”

Looking at the trophic effects of platelet-rich plasma we can hypothesize that it has relevance to tendon healing through growth factor modulated pathways. VEGF may be relevant in regards to stimulating appropriate angiogenesis. PDGF and TGF β 1 along with cell adhesion molecules have relevance in regards to stimulation of tenocytes and production of a collagen network. Interestingly the potential fibrotic scarring response that may be associated with TGF β 1 seems perhaps counter balanced by the expression of hepatocyte growth factor that has a strong anti-fibrotic stimulus (Anitua et al, 2006).

But does the theoretical science match the clinical outcome? This is perhaps the greatest weakness in the argument for use of biotechnologies such as PRP where the theoretical and in vitro evidence has not been supported by clear controlled clinical research. Numerous case series suggest a therapeutic benefit of PRP in the treatment of common tendon injuries though unfortunately without appropriate control and/or placebo groups there remains a question of what is producing the improvement in outcome measures. Is it the PRP or just the technique of dry/wet needling that is the stimulus for improvement? Is it just that the patients perceive an active management of their condition and the result is best explained by a ‘placebo effect’?

The strongest scientific study – and first randomised controlled trial – on use of PRP in the treatment of achilles tendinopathy showed no significant difference between PRP and placebo (saline injection) groups (De Vos et al, 2010). Whilst a scientifically well designed study and the first level one research to be published on the use of PRP in tendinopathy, it is arguably not as robust when assessing its clinical strength. Patients were excluded if they had done an eccentric program in the past. All patients underwent PRP or placebo (saline) injection in conjunction with commencing an eccentric loading program. An interesting study design when it is accepted that up to 80 per cent of patients with achilles tendinopathy will respond to an eccentric loading program within 12 weeks (and this intervention was used on both the



• Always read the label.
Use only as directed, for external use.
If symptoms persist consult your Healthcare Professional.

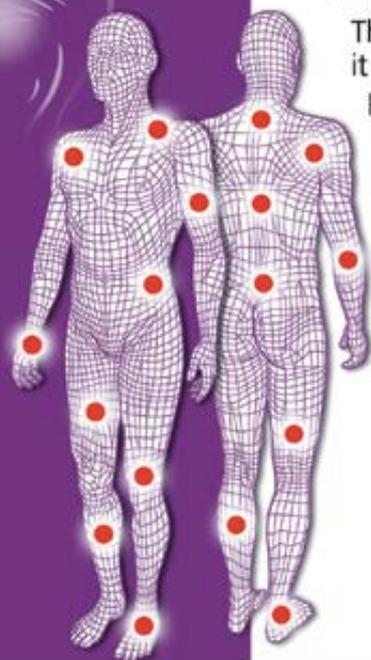
Natural Solution to complement your therapy

Arnica · Hypericum · Calendula · Melaleuca

Fisiocrem provides complementary relief in many types of Physiotherapy treatments commonly used in muscle and joint injuries, sprains and soft tissue trauma.

With high concentrations of plant extracts as active ingredients, *Fisiocrem* is an easy and natural choice for a discerning Physiotherapist. The temporary relief of muscle and joint pain makes *Fisiocrem* a useful assistant for the Physiotherapist before and after joint manipulation or mobilization. It assists the relief of muscular spasm and bruising found in common injuries and is an effective adjunct in treating low back pain and localized inflammation of arthritic joints.

The ease of use, and the clean non-greasy aspect of *Fisiocrem* makes it a useful therapeutic in your clinic and a suitable product for your patients to assist their own recovery between your treatment sessions.



fisiocremTM

► Phone now for a FREE sample and further information
1800 4FISIO • 1800 434746

This advertisement is directed exclusively to Healthcare Professionals

PRP and placebo groups). Further, only a single injection of PRP was used. Those using PRP in a clinical setting would likely agree that its value is best seen in patients who have failed traditional eccentric loading and that multiple injections are often required to achieve improved long term outcome. Also, tendinopathy was diagnosed on clinical evaluation rather than ultrasound examination which can assist in determining a patient's suitability for PRP therapy (i.e. intrasubstance tears). Finally, a commercial PRP preparation technique was used, platelet counts were not recorded and no attempt was made to modify white cell or cytokine levels. Hence the importance of the 'recipe'.

“Autologous platelet-rich plasma is one such medium that has become both widely used and studied as a medium to accelerate tissue healing over a broad area of applications.”

Osteoarthritis

Osteoarthritis (OA) is a major cause of disability and chronic pain in Australia. It is estimated that at least 3.85 million people are affected across the Australian community, at a cost to our economy of greater than \$23.9 billion each year.

Current medical treatment strategies for OA are aimed at pain reduction/symptom control rather than disease modification. These pharmacological treatments are limited and can have unwanted side effects. Viscosupplement/Hyaluronic acid intra-articular injections can be used to treat symptoms of mild to moderate knee OA however their mechanism of action is uncertain, with some studies suggesting little improvement beyond that achieved with placebo injections (Baltzer et al. 2009).

Recent research on the mechanisms of OA have focused on the catabolic cytokines involved in destruction of hyaline cartilage and joint degeneration. Interleukin-1 (IL-1) has been identified as a potent mediator of cartilage loss and reciprocally



Align your career with podiatry

Podiatrists are in high demand and QUT's new Bachelor of Podiatry – Graduate entry program is ideal for professionals who are passionate about caring for people with foot and lower limb therapy needs.

Offered on a full-time basis over 2.5 years, it's a smart choice for professionals working in health, sports science and biomedical science seeking to fast track their career progression.

You'll complete studies in a wide range of areas including pharmacology, paediatrics, sports medicine and podiatric medicine and surgery, with 'hands on' training under expert supervision at the QUT Health Clinics – a multimillion dollar purpose-built facility which provides professional services to the community.

Learn more at www.qut.edu.au/podiatry.

“What I most enjoy about podiatry is the different patients I see and the different conditions I treat. Each day I'm looking after rehabilitative needs, surgical needs and orthotics with individuals.”

Nic Sprenger, QUT Podiatry graduate

a university for the **real** world®



Interleukin-1 Receptor Antagonist (IL-1RA) has been shown to limit the intra-articular actions of IL-1 (Dinarello, 2000).

Autologous conditioned serum (ACS) is an injectable peripheral blood derived IL-1RA medium that has been used within Europe for the treatment of osteoarthritis. Research has indicated significant improvement in symptoms of OA post ACS therapy (Baltzer et al. 2009) though no research has been undertaken to determine whether ACS is disease modifying. The use of ACS is limited due to cost and need for autologous blood to be incubated overnight prior to re-injection.

Like ACS, PRP has also shown promise in the treatment of OA. In vitro studies have shown PRP to stimulate increased cartilage matrix expression indicating potential disease modifying properties. Further research has demonstrated that PRP stimulates the natural synthesis of hyaluronic acid from joint synovium (Anitua et al. 2007). An initial retrospective case series indicated significant pain reduction post intra-articular injection of PRP compared with commercial hyaluronic acid supplements in knee OA and more recently a prospective case cohort series has shown significant pain and functionality improvement with use of intra-articular PRP injections (Spakova et al. 2012).

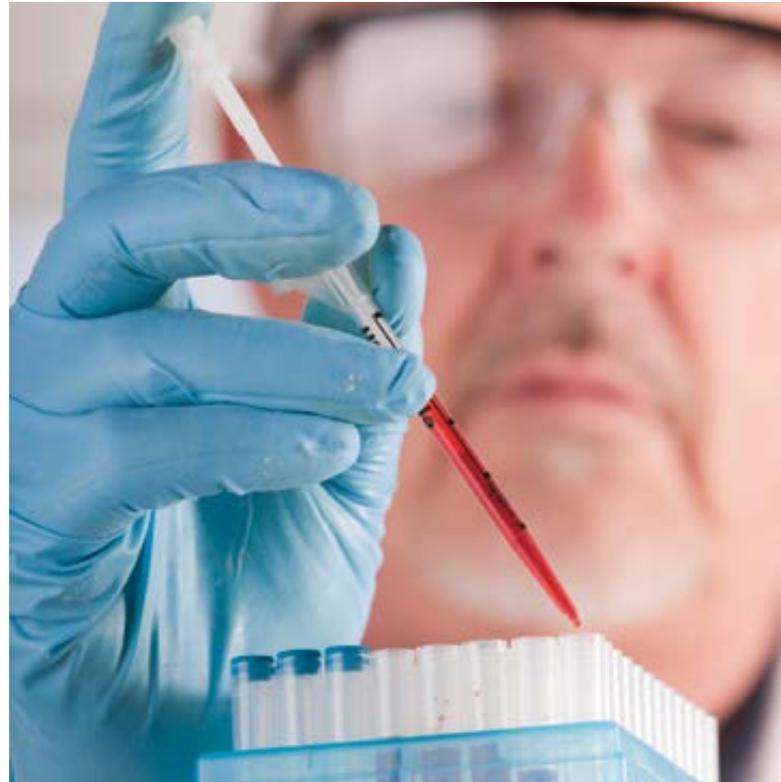
“The ability to influence such powerful pathways of healing has seen PRP explored as a therapeutic option in applications such as orthopaedics, sports medicine, maxillo-facial surgery and plastics.”

Clinician, mad scientist or witch doctor?

Our improved understanding of musculoskeletal injury has led to the advent of biotechnologies and a focus on ‘assisted’ healing. Platelet-rich plasma shows considerable theoretical promise but what we have learnt from the paucity of research available is that theoretical benefit has not always correlated with observed outcomes. And yet despite some studies that question the efficacy of PRP, others indicate significant benefits.

Whilst the research is incomplete, the use of PRP within clinical practice (in particularly the US) has outpaced the evidence. Sadly it is a real possibility that a promising therapeutic modality may be discredited undeservedly due to inappropriate use.

What has become apparent to me is that if we are to use PRP in the treatment of our patients then we need to be able to show clinical justification. Appropriate follow up of our patients with use of validated outcome scores shows that we are



interested in the results and not just blindly playing the role of ‘witch doctor’.

Despite my misgivings about the accelerated development of therapies such as PRP, I do in fact use PRP regularly in my own clinical practice. My ‘recipe’ is different to that used in published studies and I will often alter the recipe depending upon the condition I am treating. I may choose to use a white cell rich PRP preparation on one patient and a white cell poor PRP preparation for another patient. I may choose to expose the PRP to UV light activation to enhance its anti-inflammatory properties. Importantly all my patients are followed up routinely to assess outcome and I am also actively involved in numerous PRP related studies. I may be a clinician but born out of a necessity to practice evidence based medicine I have also become the scientist.

Dr Julien Freitag

Sports Physician Registrar
Lifecare Prahan Sports Medicine

References, as indicated within the article, are available at sma.org.au/publications/sport-health



DONJOY[®]

Performance & Lifestyle

14 day money
back guarantee*

OA Nano[™]
The world's lightest
OA knee brace

Tel: +1300 66 77 30
Email: Customerservice.au@djoglobal.com
www.DJOglobal.eu

DONJOY[®] by  **DJO**
GLOBAL

*Conditions apply

DonJoy is a brand of DJO Global Inc. DJO Global provides solutions for musculoskeletal health, vascular health and pain management. Our products help prevent injuries or rehabilitate after surgery, injury or from degenerative disease, enabling patients to regain or maintain their natural motion. Visit www.DJOglobal.eu



Reflections on the 2012 London Olympics

Sport Health speaks with various medical
personnel involved in the recent 2012
London Olympics.

The Beijing and London Olympic Games: A medical comparison and interim changes



Dr Peter Baquie, Chief Medical Officer at the Beijing 2008 and London 2012 Olympics compares and contrasts both Games with a look to Rio de Janeiro in 2016.

Juan Antonio Samaranch made comparing Olympics an art form. Invariably he was understandably and appropriately effusive in his praises and comfortable to offer comparisons on quality. I certainly have neither the former International Olympic Committee (IOC) Chief's oratorical skills nor licence. I have been privileged to attend and be a small player in four Olympics. I also have four children and am certainly not in any way able to offer a grading of which of these four is my preferred. All of us love all of our family members. So it seems better to sit on the fence and have a foot on both sides and contrast and compare but not rank.

“Certainly, the lead up to Rio de Janeiro will pose challenges to those entrusted medically to care for our athletes.”

The IOC each Quadrennium will rank applications from cities aspiring to host the Games. The issues of climate, environment, legacy, security, financial stability, societal factors and a respect for parity sharing venues over each of the five continents represented by the Rings are some of the factors integral to the final decision in granting the Rights. Athlete health and medical factors will be integral within this. In preparing a team medically factors unique to each city are paramount.

“Juan Antonio Samaranch made comparing Olympics an art form.”

Certainly, the lead up to Rio de Janeiro will pose challenges to those entrusted medically to care for our athletes.

So it is important to look at Beijing 2008 and London 2012 as a framework for overall model (personnel appointments, equipment and disposables purchase, Games time medical facility, pre Games athlete health review) and then factor in the issues specific to Brazil in summer (environmental-thermal stress and air quality, food and water hygiene, and communicable disease risk profile). Adapting from Beijing and London means not reinventing the wheel – the Olympic ethos has been durable over eons – but tinkering and fine tuning from these recent events to improve and seek to excel in Brazil.

Common elements in medical care for the Beijing 2008 and London 2012 Games

Australia is fortunate to have a Medical Commission which has a major advisory role to the Australian Olympic Committee (AOC) on medical guidelines and policies, and medical team structure and personnel appointment review. This comprises former and current Winter and Summer Olympics and Paralympic and Youth Olympics Medical Directors and former Head Physiotherapists.

Medical personnel are nominated by National Olympic Sports bodies to fill roles of team specific medical staff (larger teams such as hockey and athletics) and to fill medical, physiotherapy, nutrition and psychology positions for a Headquarters medical group (caring for smaller sports such as combat sports). The emphasis is appointment of those who have made a commitment to and travelled with Olympic sporting teams and gained appropriate academic and professional standards and demonstrated ability to work as a team player. SMA members, Tony Bond and Wendy Braybon filled positions of Heads of Soft Tissue Therapy and Physiotherapy respectively and set up elements necessary for these disciplines in lead-up and Games time.

“We can and need to always improve.”

All athletes require a pre Games health review, looking at medical and musculoskeletal elements – performed as part of Team Camp by sport specific staff or possibly within an Institute or by a General Practitioner. A challenge in the Olympic setting is meeting a vast variance of sport and physiology demands over 20 vastly differing sporting codes.

Medical care was delivered at Games time in Beijing and London from a medical Headquarters Clinic within modified apartments on the ground level of the Australian Team accommodation building. Sport specific care was set up in individual team accommodation areas and Medical HQ. The Australian Olympic Team (AOT) established a recovery facility outside the Village under coordination of Dr Shona Halson to provide contrast bathing, hydrotherapy, recovery and treatment soft tissue therapy. In London a second team psychologist was a welcome addition to the Recovery Centre. Within the Olympic Village, the Games Olympic Committee hosted the Polyclinic providing medical imaging, pathology, access to a large variety of medical specialities and emergency medical care. Designated hospitals provided rapid access should hospitalisation be required.

Sport science support: The Australian Institute of Sport (AIS) hosted a one day workshop in April 2007 and 2011 to review pertinent issues such as contemporary heat stress management, athlete health maintenance and immunity, sleep, jetlag, anti-doping issues and air pollution, and their potential athlete impact. Information was collated and hosted on an AIS web hosted resource able to be accessed by sport science and medicine staff working in Institutes and teams in the lead up to the Games and this information was ultimately included in the AOT Medical Manual.

Elements specific to Beijing 2008 and London 2012

In planning for Beijing, the emphasis was on heat stress, uncertainties about air quality, communicable diseases risk inherent in travel to South-East Asia, water and food hygiene concerns, challenging anti-doping requirements and uncertain cultural, language factors, and hospital and evacuation facilities. These issues did however create a potential performance enhancement opportunity for athletes. If we met these challenges better than other nations, it may have given team members a performance advantage.

Conversely London was not going to pose quite the same environmental challenges in the lead up, providing a more level

playing field from a medical preparation planning perspective with regard to performance edges. The thermal stress challenge was the potential for contrasting conditions, i.e. cool conditions especially for triathlon and sailors and warm humid days. The air quality was likely to be favourable, there were less sinister communicable diseases – upper respiratory infections and gastroenteritis, there were very user friendly anti-doping guidelines and an absence of cultural barriers. To gain any advantage medically it was going to be a case of doing all the simple elements, the ‘one per-centers’ at 100 per cent tempo, like an NRL/AFL team preparing a campaign from late summer through winter into spring.

At least that is how the planning was framed.

“Adapting from Beijing and London means not reinventing the wheel... but tinkering and fine tuning from these recent events to improve and seek to excel in Brazil.”





Beijing planning

1. **Air quality:** the plan was to optimise asthma care, optimise cardiorespiratory health especially for officials and improve aerobic endurance, to promote strict respiratory infection hygiene practices, and to 'expect the worst' as espoused in the media quoting 'medical experts' gloom. Fortunately no soldiers went down and the rain and traffic reduction cleared the skies.
2. **Communicable diseases:**
 - a. **Immunisation program:** the shadow team of athletes and officials in 2007 were immunised against Hepatitis A and B, typhoid and tetanus, diphtheria, pertussis and polio. Influenza, Varicella and Meningococcus were not subsidised. There was high uptake and no cases of any team member acquiring any of these South-East Asia endemic conditions.
 - b. **Traveller's diarrhoea (*Enterotoxigenic E Coli*):** the plan to use Colostrum derived *Travelan* was abandoned with anti-doping concerns. Food and water hygiene measures were strongly promoted. Anti-microbials, *azithromycin*, was administered early in the onset of symptoms with rapid relief and without adverse effects.
 - c. **Viral respiratory infection:** despite education and promotion of cough hygiene measures, upper respiratory infection was the most common and distressing condition encountered and impacting on performance.
3. **Thermal stress:** with many athletes travelling from an Australian winter, acclimatisation camps and strategies in northern Australia or South-East Asia were employed along with rigorous hydration protocols including AIS devised 'Slushies' (Professor Louise Burke), use of match-day cooling and recovery practices and the AOT Recovery facility under the guidance of Dr Shona Halson from the AIS. No endurance athlete succumbed to heat stress although Games time temperatures were not extreme and moderate on the whole.
4. **Anti-doping:** the main issues were the need to have a Respiratory Function test confirmation of asthma for an athlete to be granted an *Abbreviated Therapeutic Use Exemption* (aTUE) to use inhaled bronchodilator medication, for inhaled cortisone and for cortisone injected locally for musculoskeletal conditions. This was a challenge in the lead up given team members were spread far and wide.

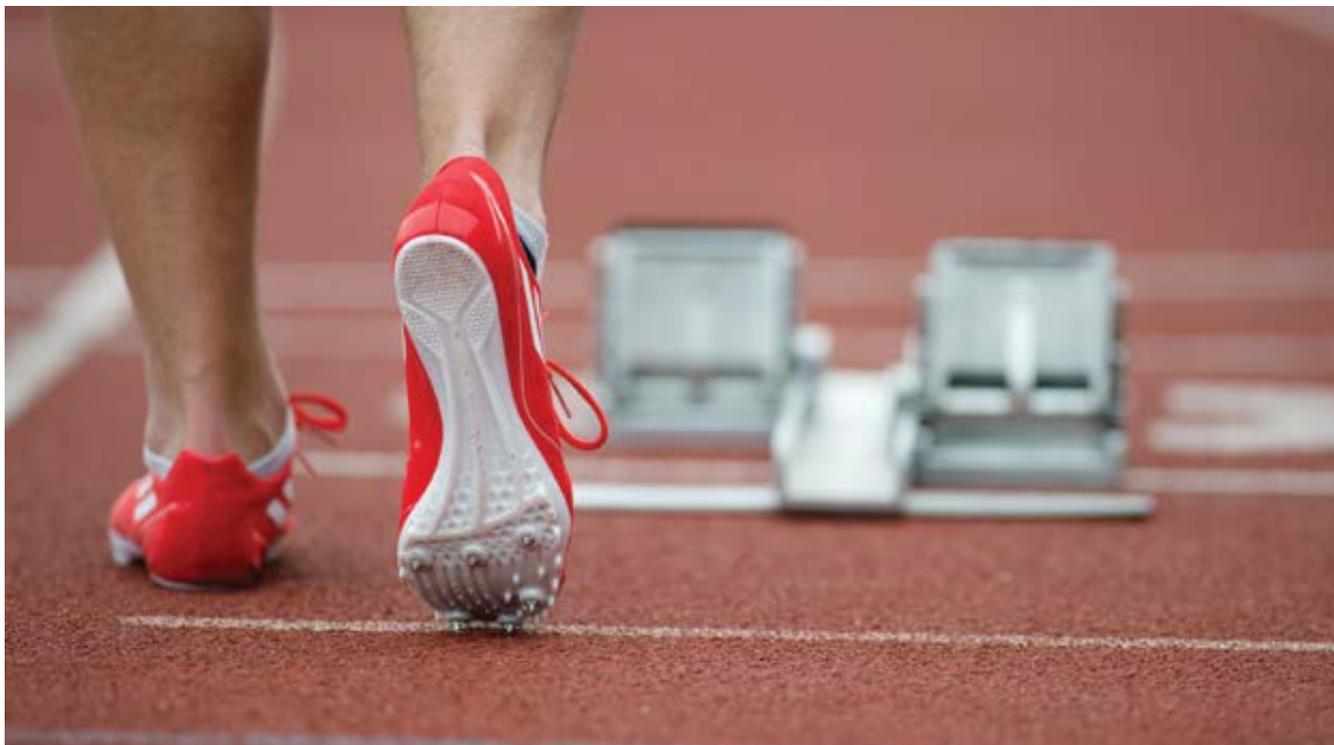
London planning

Bearing in mind Beijing, the impact of viral upper respiratory infections meant that respiratory hygiene and measures to 'enhance athlete health and non specific immunity' and recovery measures and the impact of jet lag (which was less of a threat in Beijing) were targeted. Also from Beijing, it was apparent that weight-limited combat sports required specific assistance in safe and effective weight-making to minimise performance impact.

“To gain any advantage medically it was going to be a case of doing all the simple elements, the ‘one per-centers’ at 100 per cent tempo, like an NRL/AFL team preparing a campaign from late summer through winter into spring.”

A major thrust in the lead-up to London was in meeting onerous Customs requirements for importing personal and team specific medications at Games time reflecting increased worldwide enhanced policing on sport based medications.

1. **Communicable diseases:**
 - a. **Immunisation program:** no formal program was adopted, 'secure' in the belief that the routine childhood program would suffice for travel to London. However, a clustering of pertussis infections in the immediate Games lead-up period including athletes having had boosters prior to Beijing and reports of a clustering of Measles in Europe and the UK prompted last minute advice (at a time when many athletes were overseas already) to seek a Pertussis and Measles booster. It also highlighted the need to have enhanced mechanisms for athletes to gain greater knowledge of immunisation history as information from pre Games review was often scanty. This is an ongoing difficulty in sports medicine delivery that in the next decade will hopefully be less stressful with recent additional vaccines administered and a register being available as current youngsters mature.
 - b. **Gastroenteritis:** the endemic pathogen in London is viral rather than bacterial as in South-East Asia. Pre Games prediction that 20 team members would develop symptoms, based on UK experience, meant that hygiene measures were again strongly promoted with limited isolation of cases being possible. However it remained an issue with one unfortunate shooter requiring intravenous fluids having obtained necessary TUE the night preceding his event.
 - c. **Viral respiratory infection:** again critical importance of hand-washing and cough hygiene was stressed. However this was a major disability encountered at Games time. Dr Susan White in her role as Swimming Team Doctor in Beijing and as Medical Director of Youth Olympics had developed respiratory hygiene packs, symptom relief measures to be instituted early in onset of symptoms, and these were frantically put together especially for outlying groups such as sailors and equestrian athletes. Despite the cost and handling issues, these will become an important thrust in Rio, along with emphasis and research into hygiene and 'general immune resistance' maintenance measures and heightened awareness of the critical importance of protecting airway epithelium in endurance athletes.
2. **Thermal stress:** while the lead up weeks had times of bitter Aussie winter days and then unpleasantly hot days, temperatures during the Games were moderate and pleasant with atypically low rainfall. Triathlon water temperature was 19.5°C (just under 20°C level for wet-suits) and despite one athlete falling early from her bike and being caught out on the course for considerable time, no hypothermia eventuated. Sailing conditions were climatically moderate. However, ice vests were still in demand at hockey in mid pm Finals, indicating that all scenarios need to be factored in for an event at the Olympics.
3. **Anti-doping:** The IOC again adopted WADA guidelines. This meant that anti-doping requirements were simplified in the London Games leadup and Dr Susan White undertook to ensure all athletes requiring TUE's had appropriate documentation. However specific anti-doping changes for London were:
 - a. **Dates of In-Competition:** prohibitions were the opening of the Village until the closing ceremony meaning this applied to athletes pre and post event regardless of world location.
 - b. **'No-needles policy':** introduced to restrict inappropriate injection practices. Again applying to similar dates of the In-Competition Testing meant only doctors could hold injection equipment and substances unless an athlete had a specific TUE, again regardless of location. Any injection performed was required to be notified to the IOC.
 - c. **Athlete Biologic Passport:** similar to the Union Cycliste Internationale (UCI) program and adopted by other endurance sporting organisations with high profile athletes undergoing target testing Games time.



“Aussie athletes have done, did in 2012 and always will, bust a gut in competition. The problem is, others are also desperate to win.”

4. Pre Games health review:

- a. While it is compulsory for all AOT athletes to have a pre Games health review the variance in age, physiology and health parameters, international residence of athletes and available medical support in differing National sports means that this critical process can be a challenge. For London HQ doctors they divided sports between them in a liaison role, to assist in particular smaller sports.
- b. In line with IOC 2009 Consensus, terminology on process was altered to words such as **Pre Games Heath review** so that the elements described above could be met by a broader group of medical practitioners and include General Practitioners. The word *screening* does not describe adequately all elements – cardiorespiratory, general medical, immunisation status, injury and anti-doping review. The strict Customs entry requirements for medications made this need to broaden options for examining doctors especially important for team officials.
- c. **ECG:** in line with IOC Consensus in 2009 and 2011, international trends and practices in Australia (Institutes and groups such as the AFL) a strong recommendation for athletes to have an ECG performed as part of their Pre Game health review was made. Certainly the issue at a minimum heightened the need to be diligent with clinical assessment to clues which increased an individual’s increased risk for sudden cardiac death. At the time of writing I am not aware of percentage uptake nor of the percentage requiring further cardiac assessment. Certainly I am not aware of an athlete being excluded on the basis of ECG abnormality. Personally from an Olympic perspective the role of ECG will be reviewed and modified. The next quadrennium will see further clarification of ECG criteria and significance and lowering of age criteria and other clinical parameters. Olympic teams have a far broader scope of athletes than say an AFL team with young swimmers, gymnasts, mid-age shooters, equestrian athletes and sailors with ischaemic heart disease more a concern. I do not believe it can then be a blanket compulsory intervention. Use of Medicare requires clarification as does the process of tracing review and a pool of experts in assessment.

5. **Weight-limited sports:** sports with an aesthetic component and endurance athletes have long been recognised to have weight concerns with bone and potentially mental health concerns. Combat sports tend to have less medical support in Olympic leadup and historically less medical intervention. Two athletes at Games time in London in combat sports needed to lose 8 per cent body weight to compete. Performance was impaired and the Olympic program disappointingly brief. It was refreshing and reassuring to learn from these sports background and processes involved in meeting weight and their willingness to involve outside support from persons like myself without sport specific knowledge and familiarity. Further planning and energy is necessary over the next two years, however a weight 'Athlete Biologic Passport' concept may assist along the lines of haematology parameters in endurance sports.

Performance: During and after London, there was concern about performances. Australian athletes and support personnel appreciate well the privilege it is to be involved in an Olympic campaign. Aussie athletes have done, did in 2012 and always will, bust a gut in competition. The problem is, others are also desperate to win. International standards are continually rising and our coaches and sport science practitioners are contributing to this world-wide. Cycling made major improvements, even with Cadel being unwell. Sally Pearson and Mitchell Watt delivered.

That said we all, in whatever way we can contribute, need to work at doing things better. We can and need to always improve. For instance, off-field, lessening the impact of respiratory and gastric infection on performance remains a main challenge to our medical teams. Recovery is well provided with the challenge to locate this facility as close as possible to the Village. In the unfortunate absence of football teams in London, there was fortunately little high grade musculoskeletal trauma. Overuse issues, as far as I can anecdotally report, caused minimal impact on competition in terms of event-time missing. This just does not happen fortuitously. Recovery medical centre, physiotherapy and soft tissue therapy services and the physiotherapy venue at teams had a major impact. We take their expertise for granted – this is even more apparent in sports where a physiotherapist (sailing, equestrian) does not have immediate doctor presence and covers medical issues so well.



Team GB and British fervour demonstrated in London how spectator passion and athlete endeavour working in a well supported environment can yield success. China have continued what was generated in 2008 in ongoing Olympic (and Paralympic) performance. Both events were outstanding and unfair to compare, as it is to decide on whether you love your mother or father more.

Dr Peter Baquie

Chief Medical Officer, Beijing 2008 and London 2012 Olympic Games

5 minutes with... Ruth Anderson

Head of Psychology Services, Headquarters Australian Medical Team, London 2012



Ruth Anderson (right) with Dr Lyndel Abbott, London 2012 psychologist at the Women's Basketball.

Describe your work and a typical day during the Olympics.

The one certainty at an Olympic Games is there is no typical day. Every day at the Olympics presents different challenges and issues, so work was based on the priorities of the day. In my role this might include sessions with athletes in the medical clinic in the athletes' village, consultation with coaches, liaison with the Recovery Centre or attendance at training or competition.

Was this your first Olympics? If not, how did it differ/compare?

London was my second Olympic Games, as I was in the same role for Beijing in 2008.

The significant difference in my role from 2008 to 2012 was the increase in services for psychology which facilitated a proactive approach to service provision. This enabled a greater capacity for direct servicing to athletes and sports, alongside the development of resources and information on psychological recovery, relaxation and sleep.

How did your training/background equip you to provide sports medicine services at the Olympics?

Working at the Olympic Games provides the opportunity to utilise a wide range of professional skills, and the challenge is

to adapt services appropriately to best meet the needs of the athlete and the sport. One of the most critical psychological aspects of performing at the Olympics is the ability for the athlete to adapt and cope effectively with the pressure of the environment. Most importantly for me is my training and professional background in mental health, which alongside my experience in high performance sport, provides the opportunity to assist athletes to both maximise performance, and enhance psychological wellbeing.

What were the most significant issues you dealt with?

A diverse range of psychological issues present at the Olympic Games primarily related to performance, as athletes make efforts to ensure they are able to perform at their best under pressure. Psychological skills to maximise wellbeing and cope effectively are as important as performance skills at the Olympic Games to enable athletes to adapt to, and cope effectively, in the environment.

What was your greatest highlight of London 2012?

A highlight in London was the successful integration of psychology services into the recovery centre. For the first time we had a psychologist, Dr Lyndel Abbott working with me providing services from the Recovery Centre. This enabled the Headquarters Psychology Services to reach more athletes and teams, and facilitated a proactive approach to the enhancement of psychological wellbeing.

What was your greatest challenge of London 2012?

Being able to prioritise time and servicing to ensure that all athletes were able to access the services they required to facilitate their performance.

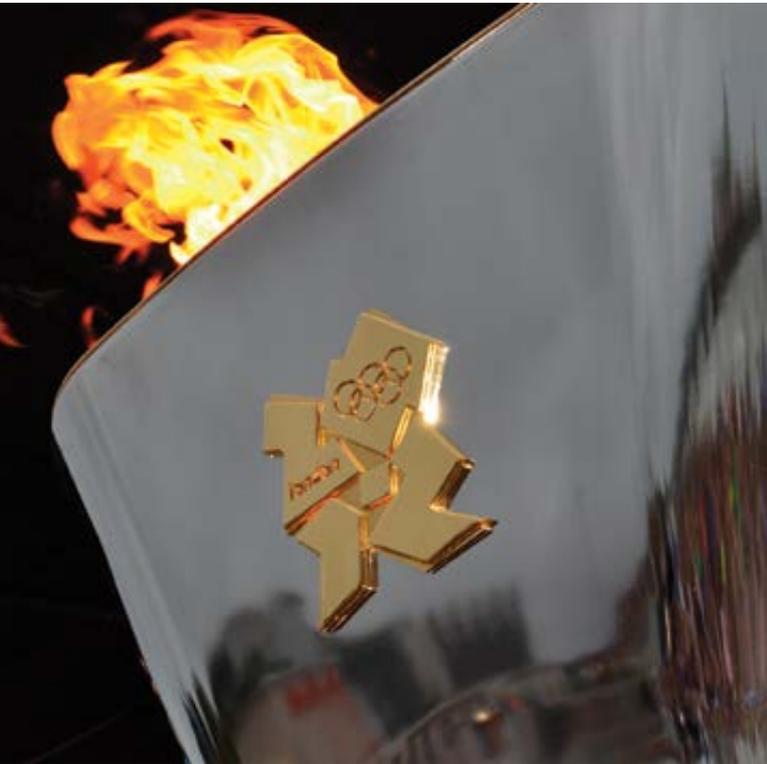
What will you do now that the Olympics are over?

Now I'm back from London, I'm busy planning for the next Olympic cycle to develop athletes for Rio. I am currently in the midst of my PhD investigating the optimal psychological state for peak performance. I will use the experience and insight gained at the highest level of sport competition and will be integrating this into my applied practice and research.

Ruth Anderson is a Senior Psychologist at the Australian Institute of Sport, and alongside her private practice, she has worked with Olympic and professional athletes at all levels of international competition. Ruth was the Head of Psychology Services for the Australian Olympic Team for the 2008 Beijing Olympic Games and 2012 London Olympic Games.

5 minutes with... Brent Kirkbride

Head physiotherapist Athletics Team, London 2012



Describe your work and a typical day during the Olympics.

In the pre-camp in Tunbridge, predominately treating or attending track or weights sessions with the athletes. The opportunity to actually watch training, or modify training if required due to injury was of great benefit and something not available in a normal clinical environment. Treatment was approximately from 9am to 6pm. Once competition started days were extremely long as the athletics program runs from around 7am till 10pm. Athletes in competition and those back in the village waiting to compete all needed treatment, so it was logistically difficult at times.

Was this your first Olympics? If not, how did it differ/compare?

Sydney was my first Olympic experience, which was very special, being my home country and city. The buzz around the country and the crowd's energy made it truly memorable. Athens had the history – the marathon finishing in the original modern Olympic stadium was something to remember. There were some challenges though; the organisation of transport, set up at venues and aspects of the village. Beijing's Olympic

Park and village were exceptional; the organisation was spot on (as to be expected), and venues like the Bird's Nest were certainly unforgettable. London was superbly organised with fantastic facilities. The familiarity of the city's sites provided a sense of home. Another amazing experience. London saw a real investment by Athletics Australia's High Performance program in medical support and structure to reduce the impact injury had on performance at the games. This resulted in a significant decrease in the number of injuries we had at the Olympics with none of our top athlete's performance impacted by injury.

How did your training/background equip you to provide sports medicine services at the Olympics?

The main benefit has been clinical experience. I have obtained this by working with the athletes through an Olympic cycle, and at the World Championships, Commonwealth Games and National Championships. These all provide a pretty good idea of what works for them during competition.

What were the most significant injuries you dealt with?

Due to its diversity, athletics has a wide range of injuries. The main issues during London 2012 were overuse injuries predominately tendon, muscle tears, joint impingements especially ankles with the jumpers, low back injuries with the throwers and hurdlers, and shoulder injuries with the throwers.

What was your greatest highlight of London 2012?

Sally Pearson's gold medal.

What was your greatest challenge of London 2012?

Being able to find the balance between managing injuries and not impacting on high performance training and thus outcomes.

What will you do now that the Olympics are over?

Return to work as time away is difficult to the practice.

Brent Kirkbride is Director at Sydney Sports Medicine and at Sydney Sports Physiotherapy. He is the NSW Institute Sport Physiotherapy Coordinator and the Athletics Australia Physiotherapy/Massage Coordinator. Brent has attended the Sydney, Athens, Beijing and London Olympic Games; the Kuala Lumpur, Manchester, Melbourne and Delhi Commonwealth Games; and the World Athletics Championships from 1997–2011.

Food diary of the London Olympics



Australian Institute of Sport Head of Sports Nutrition and Sports Dietitians Australia Fellow, Professor Louise Burke gives *Sport Health* a run down on the food situation at the recent 2012 Olympic Games.

Each Olympic Games has its own story – its own challenges, triumphs and heartbreaks. The 2012 London Olympic Games posed a unique set of opportunities and tests. The 30th Olympiad provided the usual four years of preparation for the Australian Olympic Committee and the Australian sports system. We looked ahead to a gentler challenge than faced over the past two Games. This time we would be in a temperate climate, language-friendly, cuisine-familiar, hygiene-dependable environment. Thus many of the creative problem-solving tactics we had employed to help us ‘punch above our weight’ in Beijing and Athens would be unnecessary. Some of the biggest challenges came in the lead up – a period of suspended animation as we contemplated Crawford reports and the Government response, as well as the Global Financial Crisis which slashed commercial budgets and required lots of belt tightening. However, we all worked hard with improved networks, new science and direct athlete interaction to get to the opening bounce in the best shape possible.

“The brief: to feed over 15,000 athletes and staff from more than 200 countries over a continuous 24 hour cycle for a 28 day period.”

Arriving in London mid-July, we were the second wave of Aussies into the Village so our bus trip managed to pass all the London postcard sights once, and on purpose, instead of by accident and repeatedly, as occurred for the first delegation (apparently their Irish bus driver on his first day on the job did the whole European Vacation routine before admitting he neither knew the territory nor how to use the GPS gadget on the dashboard. It required one of the team to guide him to the Village with the aid of an iPhone).

The London Village was wonderful – green, clean and compact. Built in the East to transform a previously deprived area, it was well serviced by the fantastic transport of the London Underground and the brand spanking new and very upmarket Westfield shopping centre. To arrive at the Olympic Park meant passing through the shopping centre – smart thinking, Frank Lowy! The sporting venues were either co-located in the convenience of Olympic Park or housed in the history of a London landmark (think Lords, Wimbledon, Eton Dorney, the Mall at Buckingham Palace). The Australian Olympic Committee turned the two apartment blocks assigned to Team Australia into a well functioning suburb, complete with Athlete Services, Medical Clinic, pictures from Aussie school children on our walls, Lawrie Lawrence to organise daily activities and emus guarding the front entrance. Just like home.

“A walk of 30 metres would take you on a trip across the world to immerse yourself in a totally new food culture.”

The Village facilities and ambience supported a comfortable lifestyle for the month. Green spaces provided shade and tranquillity. Residential Service areas offered bean bags inside and deckchairs outside if you wanted to chill out. Laundry services took your bags of dirty washing and returned it washed and dried (thank goodness for non-wrinkle fabrics), and vending machines popped up on every corner to dispense free drinks in response to a swipe of your Coke token. To complement the fare provided in the main Dining Hall, there was an open air BBQ area providing a carvery-style menu and stalls offering the best of British, Scottish, Irish and Welsh finger foods and treats (think bowls of raspberries and ice-cream, scones and jam, oatcakes etc). Other food carts dotted around the Village provided yoghurt and granola pots and coffee in the morning, and packed sandwiches and fruit salad pots at lunch. Then there were religious centres, a couple of recreational centres with games, and a large Fitness centre. Did I mention that all this is free? You can

virtually put your wallet away for the month and let the Olympic Family look after your needs.

The Main Dining Hall, of course, was a focus of our work. Here you have to imagine a huge open plan building, capable of seating 5,000, filled with stations offering the cuisine of many regions. There were separate areas for the Best of Britain, Europe, the Americas and Mediterranean, Africa and Caribbean, Halal and India and Asia, each with hot dishes, salad bars, desserts and seasonings. A walk of 30 metres would take you on a trip across the world to immerse yourself in a totally new food culture. And then, of course, there was the signature continent of McDonalds with a Maccas shopfront plus a McCafe. This area always provides a good barometer of the Games timetable, with small but committed consumption of fries and burgers in the early days gradually giving way to large queues as athletes finish up their competition and indulge. Aramark, an American company and long time partner in the Games Food Service business, was on board with a local catering company to provide the nourishment.

The brief: to feed over 15,000 athletes and staff from more than 200 countries over a continuous 24 hour cycle for a 28 day period. The menus have to meet a variety of food preferences, including cultural and religious diversity, dietary restrictions, event-specific sports nutrition needs, and changes in nutrition needs between periods of final training, taper, competition and celebration. Food safety issues are of high priority. Imagine the fallout of 15 thousand people with food poisoning, or high profile athletes unable to perform on the biggest day of their lives due to tummy issues. Then there is the constant balance between healthy nutrition guidelines and opportunities for food enjoyment, as well as a chance to show off the local cuisine. A special requirement for the London Olympics was to take into account the needs of the Muslim athletes and staff who chose to fast during the month of Ramadan, which coincided with the Olympic schedule. Another new focus of the London catering operation was the 'green theme' – with a new food code being instigated by LOCOG to provide sustainable food with practices that were environmentally sound, socially just and ethical. According to communications with the caterers, this added a considerable extra time and cost commitment, with several challenges in terms of locating sufficient supplies of local foods. Information about the menu and individual food items was provided, as at past Games, via nutrition cards and a nutrition kiosk and a new web-based education tool which provided information on the menu structure and composition of individual food items.

“The Australian Olympic Committee turned the two apartment blocks assigned to Team Australia into a well functioning suburb, complete with Athlete Services, Medical Clinic, pictures from Aussie school children on our walls, Lawrie Lawrence to organise daily activities and emus guarding the front entrance. Just like home.”

Overall, the Olympic food service was terrific, with plenty of variety within meals and over the month. The additional catering outside the Main Dining Hall added flexibility, portability and a break from the 'same old, same old' feel that eventually happens when you are in the same location with the same crowd, and the same knives and forks for a month. This is a credit to Aramark and a sign of their experience, but also a result of the recent input of the Professionals in Nutrition for Exercise & Sport (PINES) Catering sub-group, pinesnutrition.org, comprised of Fiona Pelly, Nanna Meyer, Jo Mirtschin and other dietitians from around the world with expertise in catering for athletes.





100 DAYS
6 04 21
HOURS MINS SECS

to the Opening Ceremony of the
London 2012 Olympic Games





Many Australian sports dietitians contributed to the successes of our athletes and the list of our activities included:

- Assisting athletes with orientation and management of nutrition needs within the Olympic Dining Hall and catering facilities; liaising with Aramark to gather additional information and services.
- Facilitating food requirements for athletes with special nutrition needs – ranging from low fat dairy and gluten free options to sweet potatoes for low GI carbs, and pickle juice for cramps.
- Organisation and management of additional sports foods and products; oversight of nutritional supplementation protocols.
- Oversight and assistance with special nutrition strategies (e.g. pre-cooling strategies, recovery nutrition).
- Assistance at feed zones in ultra-endurance events (road cycling, marathon, 50 km walk).
- Oversight of strategies of weight-making athletes (although most of our athletes do a better job, the magic wand is still required on occasion to get rid of substantial numbers of kilograms in hours or days).
- Individual education and counselling of athletes for acute and chronic issues.
- Oversight of nutrition monitoring activities (e.g. hydration monitoring).

Then of course, there are the heavy lifters involved with the Australian Olympic Team – The Medical HQ team under the fearless leadership of Drs Peter Baquie and deputies Susan White and Donald Kuah, as well as all the Sports Science/Medicine staff of Australian National Sporting Organisations and the National Institutes of Sport system. We all put our trust in the management of the Australian Olympic Committee, which handed over the reins in London to a young and vibrant team in Chef de Mission Nick Green, and Deputies Chris Fydler and Kitty Chiller, underpinned by the strategy and operational nous of Craig Phillips and John Coates and the tireless work of many people who are industry leaders in their day jobs but Green and Gold heroes every four years.

“This time we would be in a temperate climate, language-friendly, cuisine-familiar, hygiene-dependable environment.”

I left the Village early in the morning after the fabulous closing ceremony and a few hours sleep. Tired and emotional, I headed off to a Powerbar Conference in Oxford. While doing a filmed interview at the conference, I was asked “so when do you start thinking about nutrition services and strategies for Rio?” I answered, without even needing to process the sentence, “I was thinking about it during the London Closing Ceremony, even while jumping to the beat of the Best of British Rock”. Rio isn’t that far away really... so much to do.

Professor Louise Burke

5 minutes with... Dr Mark Osborne

Sport science support, BMX, London 2012



What was your role during London 2012?

Providing sport science support during the final stages of preparation at the pre-Olympic training camp in Lumbres, France and competition support and analysis during the Games. In terms of specific sport science, we were looking at the optimal gear selection suitable for the ramp and track; the various racing lines around corners and the fastest options through the rhythm sections where there were going to be plenty of passing opportunities; and where races could be won or lost.

Describe your work and a typical day during the Olympics.

I was staying off-site from the Olympic Village in the overflow accommodation at the Queen Mary University with a number of other cycling coaches and AOC HQ personnel. We had access to the Olympic village and could either catch a shuttle

bus or the tube. The tube was much quicker but a pain if you were carrying a lot of equipment. I generally caught the shuttle. Once in the village I would catch up with the other cycling staff – coach, manager and medical staff over breakfast. After breakfast, I would pack for the trip over to the BMX venue. This would include re-stocking the nutrition area with bars, gels, lollies and a few of the riders' specific favourites such as tins of tuna, sweet potato, and even baby food. We would then arrive at the track about midday when the first riders arrived, and would generally have practice/competition from 2pm to 5pm.

Prior to practice I would check everything was working on the riders' bikes if they had any testing gear on them. During practice and racing, I would film and relay information back to the Head Coach. After practice or racing, I would download and collate all footage for later review with the riders and coach. I would then have to download and analyse any testing data collected.

I would also do a quick check of any food stores in case we needed to restock with more supplies the following day.

I was generally one of the last to leave the venue about an hour after practice, at the earliest. Then everything needed to be transported back to the village. Then I would catch up with the coach and other cycling coaches or colleagues. I usually ended up getting 'home' about midnight each night.

Was this your first Olympics? If not, how did it differ/compare?

This was my fifth Olympics where I have been involved with athletes' preparations through my work at the QAS, but only my second as an official member of the team (first being Beijing with the BMX team).

Having been heavily involved in preparations for Sydney, and also attending, the London Games had a similar feel. The crowds always seemed to be having a good time, the close proximity of the majority of venues was good, and there were no language barriers. Security was tight prior to the London Games, and remained so all the way through whereas it did not seem to have the same presence in Beijing as the Games drew to a close. Another notable difference was that access to other events was more difficult in London compared to Beijing.

How did your training/background equip you to provide sports medicine services at the Olympics?

I've had almost 20 years experience in the Australian SIS/SAS system now working as a sport scientist. For that duration I've worked with the QAS cycling program and always had an interest in speed and power events, so working with BMX was a natural extension.

Whilst I have a background in physiology, I have had to gain a broad perspective and understanding of other disciplines and areas to help provide effective solutions or know how to access those resources when necessary.

What were the most significant injuries you dealt with?

Thankfully I didn't have to deal with any at these Games! We had a couple of cuts and bruises from the pre-Olympic camp, but during competition we had the support of the Cycling Australia Team Doctor and physio in the pit area who were able to be hands on with the riders whilst I was able to film from the Grandstands.

What was your greatest highlight of London 2012?

BMX related – seeing Sam Willoughby win a silver medal.

Non-BMX related – a toss-up between Anna Meares and Sally Pearson's gold medals; Usain Bolt and the rest of the Jamaican sprinters; and David Rudisha breaking the Men's 800m World Record.

What was your greatest challenge of London 2012?

The biggest challenges were during the final stages of preparation. BMX riders are part of a decentralised program with some based in the US whilst others are semi-permanently based on the Gold Coast. As a result, some riders are used to training on their own, whilst others are certainly more accustomed to the squad environment. This preference for different training programs makes life logistically difficult for coaches when you have to schedule venue access, transport etc. Increased media interest and promotional activities also are a challenge for riders' time.

What will you do now that the Olympics are over?

Go back to work! I flew to Australia straight after the competition, got into Brisbane at 7am and was at work by 10am. I figured it was one way to fight jet lag!

In terms of BMX, we've already started planning for Rio; identifying areas for future attention, dealing with the ever changing qualification criteria for World Championships and subsequent selection criteria, and refining some of the technology we have been developing.

In terms of QAS work, we are currently reviewing a number of areas within our sport science unit with the intention of always improving the effectiveness of our work.

Senior Sport Scientist, **Dr Mark Osborne** is the Manager of the Queensland Academy of Sport Science unit. Mark has been involved in a number of world championship and Olympic campaigns and was a member of the 2008 and 2012 Olympic Cycling Teams providing competition support for the Australian BMX squad.

5 minutes with... Georgette Stephens

Soft Tissue Therapist Australian Rowing Team and Australian Medical Headquarters, London 2012



Georgette Stephens (right) with Jessica Fox, silver medallist Kyaker at the Welcome Home Parade in Sydney.

Describe your work and a typical day during the Olympics.

Looking after the rowing team required the ability/stamina to work long days performing many massage treatments. The physiotherapist and I would travel to the Olympic rowing village of a morning and treat the crews not racing that day. We would eat lunch at the rowing village then drive ourselves in our medical car to the Eton Dorney Centre where the rowing team housed their priority racing crews. We would be available to treat these team members who may have raced that morning, and need recovery work, or were preparing for racing the next day. Some nights we were still treating at 9.30pm to make sure the athlete's needs were met.

Was this your first Olympics? If so, how did it differ/compare to your previous experience?

This was my first Olympics and it was very clear from the team selection processes that there was more pressure surrounding results. I found that athletes, coaches and staff needed to manage their fluctuant emotions and stress much more effectively as the stakes were higher. Personally, I found my excited reaction to crews winning medals at the games far outweighed my reaction to the world championship medals achieved the year before. The Olympic medals seem so much harder to attain with four years between competitions.

How did your training/background equip you to provide sports medicine services at the Olympics?

Having worked four years with the Sydney Swans, followed by another four years of international travel with different sports, you become very aware of how important your role as a team member is. It requires more than just your soft tissue therapy skills which need to be well developed. You need to be able to work in a high pressure situation making decisions quickly and working effectively. You need to communicate to all team members with an open mind, be willing to learn, share knowledge whilst being able to receive criticism, and self-assess your involvement as a team member always looking to improve.

What were the most significant injuries you dealt with?

There were at times quite severe lumbar and thoracic issues within the rowing team requiring the athletes to decrease or stop training. This ranges from a rib showing stress reaction signs to nerve impingements in the lumbar spine.

What was your greatest highlight of London 2012?

Watching in the grandstands as our rowing crews, who I've worked with for four years, came down the course and won their Silver and Bronze medals.

What was your greatest challenge of London 2012?

Not overeating in the dining halls with all the free food and drink available 24 hours a day. I maintained composure!



Georgette with swimmer, Eamon Sullivan.

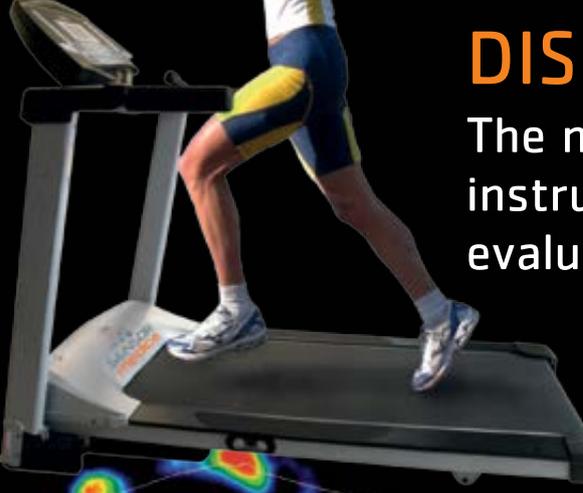
What will you do now that the Olympics are over?

Go back to normal life managing my massage business, and catching up with family, friends and clients who have missed me. Then it is onto the countdown to Rio 2016 or at least the next World Rowing Championships in Korea next year!

Georgette Stephens is a qualified Remedial and Sports Massage therapist and is a practitioner at Sydney Sports Medicine Centre. Georgette worked as a Soft Tissue Therapist for the Australian Commonwealth games team in 2010. Georgette runs her own business, Sydney Elite Massage Therapy, www.sydneylelite.com.au



Lauren Van Leent, Georgette Stephens and Kellie Wilkie, Rowing Team Medical Staff.



DISCOVER RunTime.

The new generation of integrated instruments and technology for postural evaluation and biomechanical analysis.

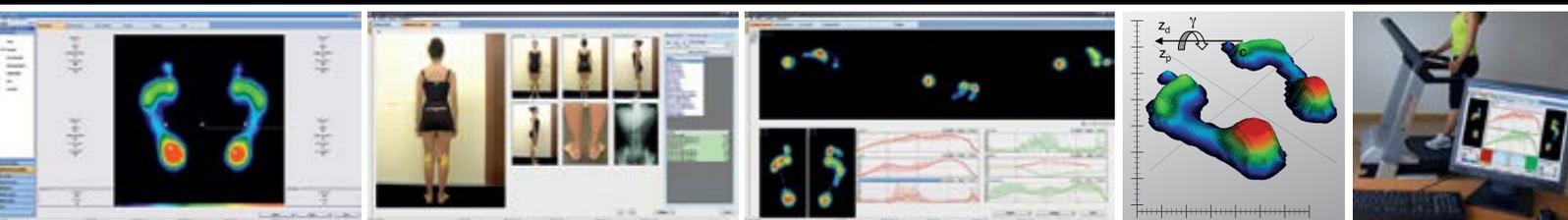
- Foot Pressure Treadmills
- Foot Pressure Analysis
- Biomechanical Video Gait Analysis
- Posture Analysis
- Stabilometry or Sway/Balance Testing
- Cad/Cam foot Orthoses



BodyTech has 15 years experience with clinical technology in health.

For more information including products and pricing visit

www.body-tech.com.au or email sales@body-tech.com.au



PROVIDING EXTRA SUPPORT.

At The Athlete's Foot we see all types of feet and conditions, which is why it is so important for our staff to have the best training. Our on-going training program keeps our staff up to date with the latest shoe technologies, fitting techniques and recognising when a customer needs to see a qualified Health Professional.

To support you in the care of your patients, **The Athlete's Foot** have a strong referral program in place. We recognise when a customer needs to be referred to a Health Professional and when you refer patients to us, you can be confident they will get the best footwear and shoe advice for their foot type and condition.

For more information on how you can become part of our referral program, contact your local **The Athlete's Foot** store.



www.theathletesfoot.com.au

The Athlete's Foot is the exclusive Sports Footwear
Retailer of Sports Medicine Australia.



The keys to business success

To help make the most of your business, *Sport Health* brings you the following business insights.

Is your business on Facebook?

Brought to you by Papercut



Did you know millions of people connect with their customers through Facebook everyday? Facebook has over 845 million active users per month; it is the most visited website on the internet. It's easy, free and if used the right way is a great tool to interact with your target market.

Five top reasons to have a Facebook page for business

1. Interaction

Studies show that people prefer to work with businesses that have a strong social media presence. Your Facebook fan page permits you to have more personal communication with your fans than you can have through your website. Via your status updates, Facebook allows you to interact with your community every day and remind them of your presence. Facebook also allows unlimited fans and automatically accepts new fans (likers) which quickly grows your followers.

2. Expert

Facebook helps to establish yourself as an expert in your field. You become the funnel of information related to your niche through sharing tips, hints, newsworthy items, and local happenings so that your business is top of mind when your services are needed. Facebook makes it easy to pass on good content, with people easily able to share your links, videos and pictures. If you post quality content on your Facebook Page your community will provide you with valuable digital word-of-mouth advertising.

3. Brand

Facebook helps to reinforce your brand. The more places you and your consistent brand messages are seen on the web, the more you will be remembered. Everything about your Facebook page can add to your brand philosophy; even the links to other sites that you choose to share. Therefore, be mindful of where you are sending your audience to build strong brand advocates.



4. SEO visibility

A business page is a public URL and Facebook pages rank highly on search engines for content and keywords. Choose your posts and keywords carefully and in no time your page URL will be showing up in search engines. Facebook pages also allow you to comment on other pages and 'Like' other page's posts, giving your Facebook page much more visibility than it had before. As with any online posting use this feature wisely and make sure you aren't just spamming other pages — always add value to the discussion.

5. Analytics

Facebook provides Facebook administrators with page analytics (Insights). The statistics captured are valuable in tracking how many people your posts are reaching and how much is being shared. By using Facebook Insights it's easy to gauge the fan growth, post engagement and demographics. This information will enable you to refine your posts to better interact with your target market.

Papercut offers a wide range of creative services including graphic design, web design and development, brand development, social media strategies and print management. Papercut are a Government preferred supplier and serve many small business clients locally and nationally. They are committed to their clients and offer exceptional quality, flexibility, and fast turnaround times from a small and friendly team. Papercut are strongly committed to the environment, and assist clients to reduce their carbon footprint by choosing environmentally responsible suppliers and products while operating business from a sustainable studio. For more information visit www.papercut.net.au or www.facebook.com/papercut.canberra

Same, same but different. One size does not fit all!

Brought to you by David Parkinson – Davidsons



Too many people consider superannuation itself to be an investment and if the performance of their super fund does not meet their expectations, they think that ‘super is no good!’ Superannuation is in fact a trust. It is a trust that has restrictions and the sole purpose is to provide for the Member in retirement. The benefits of super are many and include attractive tax concessions. As to the investment performance, that depends on where your super fund invests your money. Let’s explain and separate the two.

Types of super fund

- Industry pooled
- Retail
- Wrap or master
- Self-managed

All of the above super funds have different offerings.

Industry pooled funds and Retail funds, in most cases, let the Trustees or a Trustee appointed investment committee decide on where to invest and what they do with your super money. Specific choices are available but predominantly a default investment choice is used.

Most Wrap and Master funds are used by professional advisers and the investments are designed and structured to meet your individual goals, objectives and risk profile.

Self-managed funds can be used and managed by the individual or together with a professional adviser.

Investments

The type of investment that is held within your super fund will determine the performance and level of volatility within your fund. The most common default fund for super has been a ‘balanced fund’. This type of fund typically holds 60 to 75 per cent of your super money in growth assets such as shares and property. Over ‘normal’ long term investment

periods of say, five years plus, this type of investment mix has been more fruitful than, for example, a more conservative concentration towards cash and fixed interest investments. Throw in a Global Financial Crisis such as what the world has experienced since 2007, and shares and property funds have been painful in most cases.

So where do you want your super invested?

- Cash, term deposits
- Australian shares
- International shares
- Property funds

A mix of all perhaps, but how much of each? Do you buy the investments direct or use a professional fund manager? Professional managers charge fees; some are worth their fees and I suggest some are not. Is it too hard and you just settled for a default fund? One size does not fit all and the first question that I suggest you ask is: What type of super fund suits you? When the type of super fund is decided, then you need to work out how your super is going to be invested within that fund.

Davidsons can provide investment and superannuation strategies that suit investor’s particular investment profile and investment circumstances.

For further information please contact David Parkinson at Davidsons on 0409 510 540 or davidp@davids.com.au

David Parkinson, Authorised Representative No. 253744 of Professional Investment Services Pty Ltd AFSL 234951

Davidsons Accountants and Business Consultants specialised service offerings of Tax, Audit, Financial Services, Personal Insurances and Self-Managed Superannuation can provide you with all the information, assistance and advice regarding your superannuation requirements. For more information visit www.davids.com.au or follow Davidsons on Facebook and Twitter.

Disclaimer: The information is of a general nature and should not be viewed as representing financial advice. Users of this information are encouraged to seek further advice if they are unclear as to the meaning of anything contained in this article. Davidsons accepts no responsibility for any loss suffered as a result of any party using or relying on this article.

What is a personal brand?

Brought to you by Social Star



“A brand is no longer what we tell the consumer it is – it is what consumers tell each other it is.” – Scott Cook

Everyone knows great brand; they advertise on TV, you wear them on your clothes, you buy them at the supermarket, people queue up and even sleep overnight to get the latest ones! Apple, Nike, Coke, Virgin, Google... we love them and we don't even know them. We feel like we have a relationship with them but they are not people, they are constructs carefully developed by business people, marketers and the media. They are created, not born.

So if you can make a brand from nothing that has specific attributes, look and feel like a real three dimensional personality, then why can't we brand ourselves? This is the concept of personal branding that was first coined by Tom Peters in the classic 1997 Fast Company article 'The Brand Called You'¹, in which he describes an individual who markets their personal strengths, attributes, and qualities to others.



A personal brand is defined as; ‘The concept of branding yourself or a product/service in a personal way, usually in order for your target market to get to know, like and trust you, and/or in order to build a relationship with them; rather than simply marketing impersonal business opportunities/products/services to them.’²

A strong digital brand is the foundation of any robust digital marketing plan for high profile individuals. Why is brand so important I hear you ask? Well it provides the basis of the culture to which the business and the individual is involved and thus, requires absolute clarity to achieve maximum effectiveness. A well-articulated brand is made up of quality pictures and words that definitively show a potential customer what the values and attributes of that person and company represent. The response to pictures and words, in the digital world, is instant so the clearer the brand appears to the consumer, the more likely the desired client is to become engaged with that brand, stay on the page a little longer and eventually do business with that company.

A strong and clear brand is equally as important to reject consumers that are not a match in terms of culture and values. We have discovered through extensive experience that when a brand matches a consumer's values, both parties have a more positive experience, spend more money and are more likely to provide referral to their peers.

In the age of ever present connectivity and social media, taking responsibility for your own personal brand is paramount for all serious business people. What does your online brand say about you?

For more information about personal branding visit www.andrewford.com.au

Social Star specialises in social media advice. We take 20 years of corporate brand marketing experience and dozens of previous digital and social media campaigns and use this knowledge to assist our clients unleash their authentic brands online, exponentially grow their digital community and reap the financial rewards with smart commercialisation principles. For more information visit www.socialstar.com.au

References

- 1 <http://www.fastcompany.com/magazine/10/brandyou.html>
- 2 <http://aztecinternetmarketing.com/blogsresources/glossary/> July 2, 2012

Lessons learnt from implementing FootyFirst in 2012



In previous issues of *Sport Health*, the NoGAPS (National Guidance for Australian Football Partnerships and Safety) project has been introduced and the principles underpinning its program development and delivery have been described. Now, 12 months on, Alex Donaldson provides an update on the efforts to support the uptake of the NoGAPS exercise-training program (known as FootyFirst) in a targeted group of community football clubs.

Finalising the program

After we developed FootyFirst and produced a draft program manual, we actively sought input from community football coaches, players, administrators and sports trainers. Two focus groups were conducted to seek feedback on how the program was presented (general impressions, text, images, etc), potential barriers to the program being widely used in community football, and strategies to reduce/overcome these. Feedback indicated that the type and level of the exercises within FootyFirst had been pitched at the right level and that the program was easy to follow and understand. The main concern was it would take too much time for community football players to complete the FootyFirst program, particularly given that most community football teams train only twice a week for about 90 minutes. Focus group participants suggested that the maximum time available in a typical training session for

this type of program would be about 20 minutes. A range of questions and concerns were also raised including; Will the program work? Why should it be done? Are players likely to become fatigued and more prone to injury in their regular football training after completing FootyFirst? The focus group participants also indicated that endorsement of FootyFirst by a highly respected individual or organisation from within the elite AFL community would be a powerful influence on community coaches and players.

After some minor tweaking of the program material and the way it was presented, the inclusion of an endorsement from the AFL Medical Officers' Association, and a 'Frequently Asked Questions' section, FootyFirst was trialed before the 2012 playing season. Members of the NoGAPS research team carefully observed a small number of experienced and inexperienced community Australian football coaches instructing their players in all of the FootyFirst exercises. Feedback was sought from these players and coaches about their experience of delivering the program and completing the exercises. One of the most important outcomes of this trial was establishing that the FootyFirst warm-up and each level of the program could be completed in the recommended 20 minutes. This information was then highlighted in the introduction section of the manual.

Getting the program out there

Our next task was to develop and implement a program delivery plan that maximised the uptake of FootyFirst among community football coaches in a single targeted league. This was done by working closely with the governing body of the league to establish a FootyFirst Advisory Group. This group consisted of: the AFL Victoria Game Development Officer for the region; the Football Coordinator for the league; an experienced Strength and Conditioning Coach and player; two senior Coaches; an experienced Administrator (Football Director) from clubs within the league; the AFL Medical Officers Association's Executive Officer (also a Director of an AFL club); and the NoGAPS Project Coordinator (also a member of the research team).

The FootyFirst Advisory Group met several times and, using Step 5 of the Intervention Mapping protocol (specifically designed to plan the implementation of health promotion programs), developed and undertook a range of activities to raise awareness about, and support the uptake of FootyFirst among the senior Coaches of the clubs affiliated with the league. The key activities undertaken included:

- A formal FootyFirst launch in December 2011 at an AFL football club facility with two high-profile guest speakers (a recent AFL Premiership Coach and a current AFL Strength and Conditioning Coach).
- Ongoing FootyFirst communication from both the research team and league targeted at senior coaches and club administrators, fitness coordinators and sports trainers.
- At least one visit to each club during pre-season training from a member of the research team.
- A FootyFirst 'Coaching the Coaches' session.
- Targeted publicity in the league's Round 1 Football Record.
- Broad publicity through a FootyFirst article in a local newspaper.
- A FootyFirst mentoring program enabling participating coaches to receive up to three hours of assistance from a qualified exercise physiologist.

What has been achieved?

Sixteen of the 22 targeted clubs signed up to implement FootyFirst in the 2012 season. Anecdotal feedback during the season indicates that nine implemented FootyFirst reasonably consistently throughout the season, five had a go at FootyFirst early in the season but had difficulty continuing

and two did not get the program off the ground in 2012 but are very keen to try again in 2013. Post-season interviews and surveys are currently being undertaken with participating and non-participating coaches and club administrators to get a better picture of how well FootyFirst has been taken up in the targeted clubs.

The NoGAPS research team is currently analysing the FootyFirst data gathered across the 2012 season and preparing for a concerted push to maximise FootyFirst maintenance and to increase uptake among targeted clubs in 2013. The lessons learnt in 2012 will also be used to promote the delivery of FootyFirst to community football clubs in another community football league in 2013.

Authors: Alex Donaldson, alex.donaldson@monash.edu (1), Belinda Gabbe (2), David Lloyd (3), Warren Young (4), Christina Ekegren (1) and Caroline Finch (1)

Author affiliations

1. Australian Centre for Research into Injury in Sport and its Prevention (ACRISP), Monash Injury Research Institute (MIRI), Monash University, Clayton, Victoria, Australia
2. Department of Epidemiology and Preventive Medicine, Monash University, The Alfred Hospital, Melbourne, Victoria, Australia
3. Centre for Musculoskeletal Research, Griffith Health Institute, Griffith University, Gold Coast Campus Queensland, Australia
4. School of Health Sciences, University of Ballarat, Ballarat, Victoria, Australia

Acknowledgements:

Thanks to Professor Jill Cook (Department of Physiotherapy, School of Primary Health Care, Monash University, Australia) for her contribution as a chief investigator on the NoGAPS research project and to the development of the FootyFirst program. The NoGAPS study is funded by an NHMRC Partnership Project Grant (ID: 565907) with additional support (both cash and in-kind) from the project partner agencies: the Australian Football League (AFL); Victorian Health Promotion Foundation (VicHealth); NSW Sporting Injuries Committee (NSWSIC); JLT Sport, a division of Jardine Lloyd Thompson Australia Pty Ltd (JLT Sport); Department of Planning and Community Development, Sport and Recreation Victoria Division (SRV); and Sports Medicine Australia, National and Victorian Branches (SMA). Caroline Finch is supported by a National Health and Medical Research Council (NHMRC) Principal Research Fellowship (ID: 565900). The Australian Centre for Research into Injury in Sport and its Prevention (ACRISP) is one of the International Research Centres for Prevention of Injury and Protection of Athlete Health supported by the International Olympic Committee (IOC).

Tracking injuries in community sport



Physiotherapist, Christina Ekegren discusses one of the biggest research studies ever carried out in community sport in Australia – the NoGAPS project field-testing Sports Medicine Australia’s electronic injury monitoring system, Sports Injury Tracker. This research is being completed as part of a three-year PhD project at the Australian Centre for Research into Injury in Sport and its Prevention (ACRISP), Monash Injury Research Institute.

“To best measure the full range of injuries in sport, clubs need to collect injury data on a routine basis.”

Why track sports injuries?

Hospital data tells us there is a high frequency of injuries in many community sports, including Australian football, rugby and soccer (Finch et al., 2007, Cassell et al., 2012). While this data provides a useful snapshot of the most severe injuries requiring hospitalisation, they do not reflect the full extent of the injury problem in community sport. This is because the majority of sports injuries are either treated by GPs and allied health professionals outside of the hospital setting, by sports trainers at the scene of the injury, or by the athletes themselves (Finch et al., 1999).

To best measure the full range of injuries in sport, clubs need to collect injury data on a routine basis. Many elite sports have already achieved routine injury surveillance. For example,

the AFL has had standardised, league-wide injury reporting procedures in place for over twenty years (Orchard et al., 2012). This has provided them with reliable information about what injuries are occurring and why, and as a result they have made successful changes to the rules of the game to improve safe participation. In 2005, for instance, rule changes to limit the run-up of ruckmen lead to a reduction in the rate of posterior cruciate ligament injuries occurring at the centre-bounce (Orchard and Seward, 2009).

Why was Sports Injury Tracker developed?

Setting up standardised injury reporting systems at the community level of sport is far more challenging because there is little funding and few personnel with the time or training to carry out data collection. To address these challenges, the Victorian Branch of Sports Medicine Australia developed Sports Injury Tracker, a user-friendly system designed specifically for community sports clubs. The development was undertaken via funding from the Victorian government’s Department of Planning and Community Development (Sport and Recreation Victoria). Since its launch in 2008, Sports Injury Tracker has been embraced by many clubs across a range of sports including Australian football, soccer and netball. However, there are still questions that need to be answered about the system, including: How accurate is the data being collected in Sports Injury Tracker? and How can SMA increase the uptake and adoption of Sports Injury Tracker in community sport?

“To ensure that any injury surveillance system can be successfully implemented and maintained, it is imperative to have an understanding of the perspectives of the people who will use it.”

What has been done so far?

Prior to the start of the 2012 football season, sports trainers from five large football leagues in Victoria (the Ballarat, Geelong, Bellarine, Southern and Maryborough-Castlemaine District Football Leagues) signed up to record injuries at their clubs using Sports Injury Tracker. Several trainers had never tried recording injuries at their clubs before, while others had previously used methods such as a whiteboard, diary or spreadsheet.

Now that the 2012 football season is over, data collected from the clubs is being analysed. The first aim is to examine the quality of the data recorded in Sports Injury Tracker by comparing it with injury data reported separately by players via text-message, and by external healthcare practitioners. The NoGAPS team will also compare injury rates between leagues in order to evaluate the impact of the FootyFirst injury prevention program.

What is still to be done?

To ensure that any injury surveillance system can be successfully implemented and maintained, it is imperative to have an understanding of the perspectives of the people who will use it. In the next phase of the research, information will be collected from sports trainers via online surveys and interviews about their motivations for, and experiences of using Sports Injury Tracker. The information will then be used to develop promotional, training and support strategies to make injury surveillance easier for clubs in the future. Support strategies are likely to include additional training for sports trainers, education for coaches on the role of injury surveillance, and/or modifications to the current Sports Injury Tracker system.

These strategies will be put in place at the start of the 2013 football season. Uptake and use of the system in the 2013 season will then be compared to the 2012 season to see if the changes made have resulted in improvements. The results will guide the development of future implementation strategies for sports trainers within all community sports clubs.

What are the implications of the research?

Improved methods of injury surveillance will lead to better quality data which will ultimately provide a more thorough understanding of injury risks and rates in sport. Such information could be used to design more targeted and relevant injury prevention strategies, and to produce safer sports policies.

Injury prevention and sport safety are an important part of the overall strategy for activity promotion in Australia (Finch and Owen, 2001). With recent survey data confirming that the majority of Australians are not meeting targets for physical activity, promotion of physical activity has become a priority for improving the health of Australians (AIHW, 2010, ABS, 2011). If injuries can be prevented, existing sports participants will be able to continue their active lifestyles into later years. Furthermore, with improved sports safety there will be fewer barriers for new participants to become involved in sport.

Authors: Christina Ekegren, Christina.ekegren@monash.edu (1), Caroline Finch (1), Alex Donaldson (1), Belinda Gabbe (2)

Author affiliations

1. Australian Centre for Research into Injury in Sport and its Prevention (ACRISP), Monash Injury Research Institute (MIRI), Monash University, Clayton, Victoria, Australia
2. Department of Epidemiology and Preventive Medicine, Monash University, The Alfred Hospital, Melbourne, Victoria, Australia

Acknowledgements:

Thanks to Professor Jill Cook (Department of Physiotherapy, School of Primary Health Care, Monash University, Australia) and Professor David Lloyd (Centre for Musculoskeletal Research, Griffith Health Institute, Griffith University, Gold Coast Campus) for their contributions as chief investigators on the NoGAPS research project. The NoGAPS study is funded by an NHMRC Partnership Project Grant (ID: 565907) with additional support (both cash and in-kind) from the project partner agencies: the Australian Football League (AFL); Victorian Health Promotion Foundation (VicHealth); NSW Sporting Injuries Committee (NSWSIC); JLT Sport, a division of Jardine Lloyd Thompson Australia Pty Ltd (JLT Sport); Department of Planning and Community Development, Sport and Recreation Victoria Division (SRV); and Sports Medicine Australia, National and Victorian Branches (SMA). Caroline Finch is supported by a National Health and Medical Research Council (NHMRC) Principal Research Fellowship (ID: 565900). The Australian Centre for Research into Injury in Sport and its Prevention (ACRISP) is one of the International Research Centres for Prevention of Injury and Protection of Athlete Health supported by the International Olympic Committee (IOC).

References, as indicated within the article, are available at sma.org.au/publications/sport-health

be active 2012 recap

Sport Health gives you all the highlights from this year's be active 2012 conference.



Overview

This year's be active 2012 conference in Sydney was a huge achievement. Over 1,300 delegates enjoyed the combination of three conferences which offered a mix of sports medicine, sports science, sports injury, and physical activity clinical and research content. Ken Powell kicked the conference off presenting some personal stories about physical activity. In a colourful presentation, Dr Powell certainly kept the audience entertained with some unforgettable images and an ingenious acronym.

Kayla Ramiscal @kaylaramiscal



"Had a great time at @beactive2012 today – great speakers, sessions and food :) Bumped that tomorrow is my last day!"

@TimLathlean



"@SMACEO thanks for the great conference – best yet! #beactive2012"

He joined a long list of insightful keynote presenters including Dr Nick Cavill, Dr Kong Chen, Associate Professor Malcolm Collins, Professor Roger Enoke, Associate Professor Claude Goulet, Dr Dale Hanson, Professor Art Kuo, Professor Nanette Mutrie, Dr Ken Powell and our Refshauge Lecturer, Professor Karim Khan.

This year we were blessed with a plethora of high calibre presentations and presenters, although it did make it hard when it came to awards time! Congratulations to Kay Crossley from the University of Queensland who took out the major prize of the Asics Medal for the Best Paper Overall for her research into osteoarthritis.

Cath Draper @DrCathD



“Really like new 5 min presentation format @beactive2012 – gets to the good stuff faster & helps those of us with jet lag stay alert!”

The social calendar was also a much talked about highlight, with delegates enjoying catching up with old friends while making new ones over dinner, poster sessions and drinks throughout the week.

Sports Medicine Australia would like to thank all conference partners and trade exhibitors for their involvement in be active 2012. Most notably we are grateful for our Platinum Sponsor Coca Cola, our major partner, Asics and our conference partners, DJO Global, The Athlete’s Foot and the NSW Government Sporting Injuries Committee. SMA also owes thanks to the Conference Chairs; ICPAPH Conference Co-Chairs, Professor Adrian Bauman and Professor Wendy Brown; ACSMS Conference Chair, Kay Copeland; and NSIPC Conference Chair Professor Caroline Finch; and their respective Conference Committees.

@Sportarts



“The Netherlands can learn from Australia: joint effort of sports medicine, public health and physical activity! Well done #BeActive2012!”

All Conference abstracts will be published online as a supplement to the *Journal of Science and Medicine in Sport*.

Selected keynote presentations and symposiums were also videoed during the conference and will be available shortly on the SMA website.

We hope all those who attended be active 2012 were stimulated by the program and took pleasure in the typically social event, and we look forward to seeing you in Phuket for the Australian Conference of Science and Medicine in Sport next year.

Dr Boris Gojanovic @DrSportSante



“Thank you @beactive2012 for a great scientific meeting, fantastic organisation and very good food throughout the congress! Just-B-Active”

Social media

Social media played a huge role in the success of be active 2012.

Multiple platforms were utilised including Twitter, Facebook, WordPress Blogs and Instagram, making it the most connected conference in recent memory.

Not only were delegates live tweeting as well as posting pictures and recaps of symposiums, but were discussing lectures and presentations online before even meeting in person!

The social media symposium, headed by a mix of researchers, practitioners and managers, was one of the more popular presentations at the conference, convincing any naysayers to embrace the change social media delivers and encouraging those just starting out on how they can expand their efforts.

Thank you to all who tweeted, liked, shared, commented, and posted for making the social media component of be active 2012 such a hit. We look forward to providing your social media voice with an international flair next year in Thailand.

be active 2012 social media outlets:

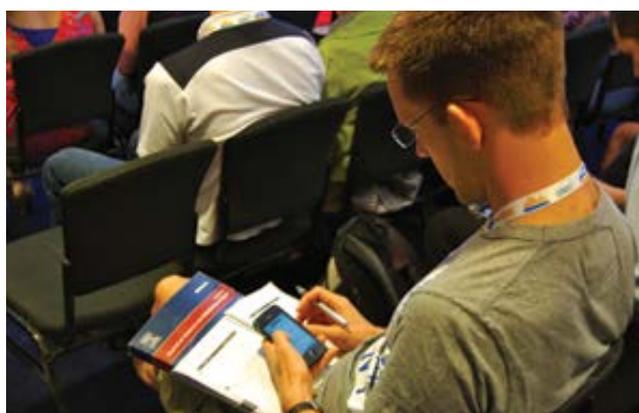
Blog: www.beactiveblog.com

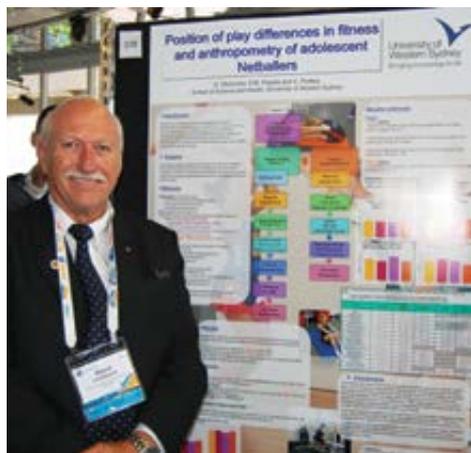
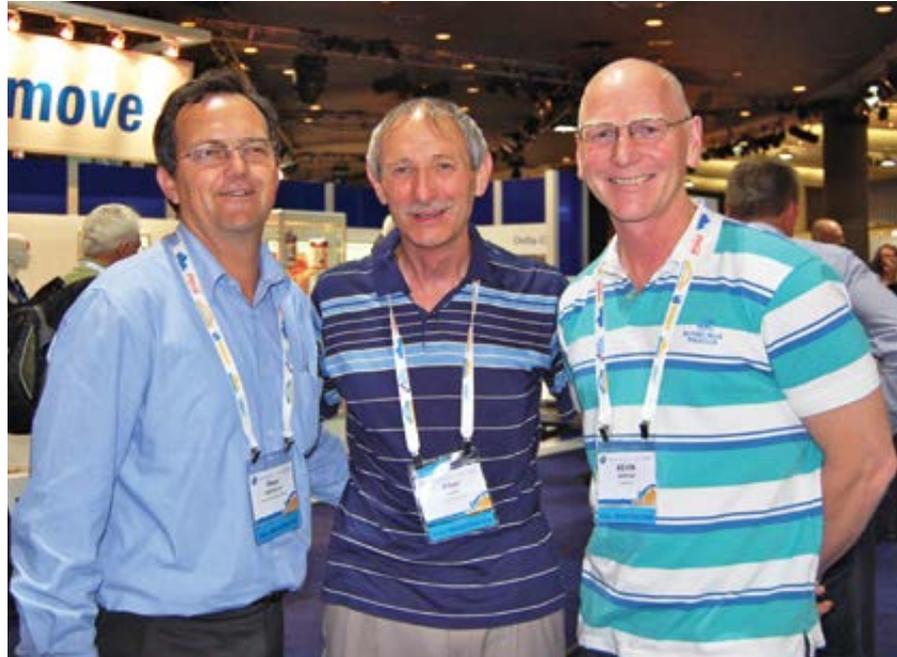
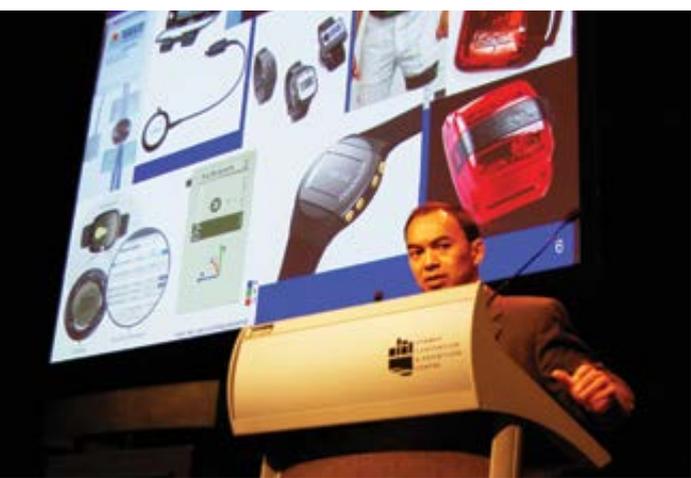
Twitter: @beactive2012 #beactive2012

Instagram: beactive2012

Facebook: search Sports Medicine Australia

LinkedIn: search Sports Medicine Australia









Kay Crossley, Harvi Hart, Joske Nauta and Alex Donaldson with their awards.

Awards

Congratulations to all be active 2012 award winners.

The Australian Sports Medicine Federation Fellows Awards 2012

ASICS Medal – Best Paper Overall

Kay Crossley

University of Queensland

A randomised clinical trial of targeted physiotherapy for patellofemoral osteoarthritis

Co-Authors: B. Vicenzino, M. Pandey, A. Schache, R. Hinman

ASICS Best Paper – Clinical Sports Medicine

Kay Crossley

University of Queensland

A randomised clinical trial of targeted physiotherapy for patellofemoral osteoarthritis

Co-Authors: B. Vicenzino, M. Pandey, A. Schache, R. Hinman

ASICS Best Paper – Exercise and Sports Science

Ryan Timmins

Queensland University of Technology

Declines in eccentric knee flexor weakness following repeat sprint running are related to declines in biceps femoris voluntary activation

Co-Authors: D. Opar, N. Dear, M. Williams, A. Shield

ASICS Best Paper – Injury Prevention

Alex Donaldson

Australian Centre for Research into Injury in Sport and its Prevention (ACRISP), Monash Injury Research Institute, Monash University

Improving the translation of sport injury prevention interventions: the Australian Rugby Union Mayday procedure

Co-Author: R. Poulos

@UlfEkelund



“Huge thanks to Wendy, Adrian and their organizing team #beactive2012 it was truly an amazing conference”

Roger Enoka @RogerEnoka



“@beactive2012 A group from Deakin University found that transcranial direct current stimulation does not improve strength gains.”

ASICS Ken Maguire Award for Best New Investigator – Clinical Sports Medicine

Harvi Hart

The University of Melbourne

Relationship between knee confidence and physical function in people with knee osteoarthritis after ACL reconstruction

Co-Authors: N. Collins, D. Ackland, K. Crossley

John Sutton Award for Best New Investigator – Exercise and Sports Science

Tina Skinner

University of Queensland

Does training status influence peak caffeine levels following caffeine ingestion?

Co-Authors: D. Jenkins, J. Coombes, M. Leveritt, D. Taaffe

NSW Sporting Injuries Committee Award for Best New Investigator – Injury Prevention

Joske Nauta

Department of Public and Occupational Health/EMGO Institute for Health and Care Research

Prevention of fall-related injuries in 7-12 year old children: a cluster randomized controlled trial

Co-Authors: D. Knol, L. Adriaense, K. Klein Wolt, W. van Mechelen, E. Verhagen

Wendy Ey, Women in Sport Award

Nobuo Yasuda

International Pacific University

Effects of menstrual cycle phase on salivary α -amylase activity following 2 hours of cycling exercise in recreationally active eumenorrheic women

Co-Authors: T. Tanioka, N. Iwashita, K. Yamamoto

Aaron King @AaronkingEP



“@beactive2012 Big promotion in workplace. Standing desks, utilising more than one workspace per person, health breaks built in.”



Asics Medal Winner, Kay Crossley with Asics General Manager of Product, Mark Doherty.

ASICS Best Poster – Clinical Sports Medicine

Joanne Kemp

University of Queensland and Bodysystem Physio

Physical impairments are greater following hip arthroscopy in people with chondropathy compared to people without chondropathy or controls

Co-Authors: A. Schache, M. Makdissi, K. Sims, M. Pritchard, K. Crossley



@EvertVerhagen



“Bye Bye Sydney, bye bye #beactive2012. Great meeting... @SMACEO well done pic.twitter.com/Pjsh6XJ3”

ASICS Best Poster – Exercise and Sports Science

David Maclean

Glasgow Caledonian University

Identifying and classifying stair ascending and descending using a single uni-axial body-worn accelerometry device

Co-Authors: P. Dall, M. Granat

ASICS Best Poster – Injury Prevention

Christina Ekegren

Australian Centre for Research into Injury in Sport and its Prevention, Monash Injury Research Institute, Monash University

Sports trainers' attitudes towards injury surveillance in community Australian Football

Co-Authors: A. Donaldson, B. Gabbe, L. Sheehan, C. Finch

The International Congress on Physical Activity and Public Health 2012 Research Awards

Student Award

Masamitsu Kamada

Shimane University, Japan Society for the Promotion of Science

Community-wide campaign using social marketing to promote physical activity in middle and old-aged people: a cluster randomized controlled trial

Co-Authors: J. Kitayuguchi, S. Inoue, K. Shiwaku

Early Career Award

Justin Richards

University of Oxford

The impact of a sport-for-development programme on the mental health of young adolescents in Gulu, Northern Uganda

Co-Author: C. Foster

Developing Country Award

Ines Gonzalez-Casanova

Emory University

Familial determinants of sedentary behaviour in children 5 to 18 years from Colombia

Co-Authors: A. Stein, O. Sarmiento, M. Pratt

ASMF Fellows

During the Conference the ASMF Fellows enjoyed a wonderful evening at the ASMF Fellows Dinner, held at The Loft at Jones Bay Wharf.

Congratulations to Dr Mary Magarey of Adelaide, South Australia who was awarded Fellowship.

Mary Magarey is a Specialist Musculoskeletal Physiotherapist and Specialist Sports Physiotherapist, Senior Lecturer in the School of Health Sciences, University of South Australia, where her primary responsibility is classroom, laboratory and clinical education on the Master of Musculoskeletal and Sports Physiotherapy program. Mary completed her PhD in shoulder diagnosis in 1999 and has been involved in research, education and clinical practice related to the shoulder region for more than 20 years. She was awarded her Fellowship in Musculoskeletal Physiotherapy by the Australian College of Physiotherapists in 2009 and her Fellowship in Sports Physiotherapy in 2010. In addition to her university commitments, Mary also runs a small consultant specialist practice where the majority of her work is with patients presenting with shoulder disorders, with a particular interest in the throwing shoulder.

An ASMF Fellows Certificate of Appreciation was also presented on the night to Dr David Bolzonello. Read more about David in his 5 minutes with... article on pages 4 and 5 of *Sport Health*.



Tasmanian Director, National Board, Tim Pain with Mary Magarey.

Save the date: ACSMS 2013

October 22–25, 2013

Hilton Phuket Arcadia Resort and Spa, Phuket Thailand



www.davidsons.com.au



Wealth Management

Superannuation & Retirement Strategies

Wealth Succession and Transition

Philanthropic Advisory

Taxation Consulting

Tax Advisory & Administration Services

Steven Skoglund

E: stevens@davidsons.com.au

Level 1, 26 Thomson Street

South Melbourne Victoria 3205

SAVE THE DATE

ASICS CONFERENCE OF SCIENCE AND MEDICINE IN SPORT

22 - 25 OCTOBER 2013

HILTON PHUKET ARCADIA RESORT & SPA

JOIN US IN PHUKET!

SPORTS MEDICINE AUSTRALIA'S
ANNUAL CONFERENCE IS TURNING 50
AND WE ARE CELEBRATING IN STYLE!

THE LATEST INDUSTRY RESEARCH
PRESENTED IN AN IDYLIC LOCATION.

PROFESSIONAL DEVELOPMENT AND
NETWORKING AT ITS BEST.



The speed-fatigue trade off in hamstring aetiology: analysis of 2011 AFL injury data



This article reanalyses the relationship between hamstring injuries and interchange usage within the Australian Football League, taking into account the data and the effects of additional byes from the 2011 year.

The hamstring strain is the most common injury in the Australian Football League (AFL) and is responsible for the highest number of matches missed through injury¹. Hamstring injuries generally occur acutely from a high intensity event (as per the 100m sprinter tearing the muscle after 40m of running) during a match or training session or, less commonly, as a gradual onset injury with specific onset hard to isolate. The majority of hamstring injuries in the AFL occur in matches although some do occur during training sessions or have an unknown/insidious onset. Known risk factors for hamstring injury include player age, past history of hamstring injury, strength deficits, indigenous race and past history of other injury (including calf, knee, ankle and groin injuries)²⁻⁶.

The use of the interchange bench in AFL football changed over the period 2003–2010. Teams made fewer than 30 interchanges per game in 2003 but greater than 100 interchanges per game in 2010. The AFL instituted a rule change for season 2011 which restricted the number of players available on the bench who could interchange to three, with the fourth player on the bench only available as a permanent substitute⁷. The rationale for the change was threefold: trying to reduce congestion and improve the game as a spectacle, improve fairness in the situation where a player was lost to injury and also trying to limit the rise in injuries that had been seen over 2003–2010, at the same time as increasing interchanges.

Aside from the introduction of the substitute rule, a further change in 2011 to the competition was the introduction of a seventeenth team, the Gold Coast Suns. This required at least one team per week to have a bye as there were an odd number of teams in 2011.

“Speed and fatigue obviously have the potential to trade-off against each other and previous analysis suggests that speed is likely to be a greater risk factor than fatigue⁸.”

A number of analyses had been conducted looking at the association of interchange and injury risk over the period 2003-2010 as part of the decision-making process for instituting the substitute rule. The most sophisticated found that increasing interchanges by the opposition increased the risk of hamstring injury in an individual⁸, and where the opposition made more than 60 interchanges in a game there was a significantly higher risk of hamstring injury. In contrast, interchanges are a protective factor against hamstring strains for the person making the interchange, with players who had seven or more interchange movements in the previous three weeks being protected against suffering a hamstring injury. An interpretation can be suggested from these seemingly opposite findings, with respect to hamstring injury risk, that rest is helpful for the individual player but harms his opponent(s). This is biologically plausible, especially given that Australian Football is a game in which players generally take on direct opponents whilst on the field. A player who has returned to the ground having just enjoyed a rest may also enjoy a transient reduction in risk of hamstring strain, but if his direct opponent has not rested and so is more fatigued, the opponent may have a transient increase in hamstring injury risk whilst trying to ‘run with’ his more rested opponent. If reduced fatigue helps a player and also harms his opponent (in terms of performance), game theory suggests that as teams discover this relationship they will try to rapidly increase their number of interchange movements in order to be less fatigued, on average, than the opposition. This was observed over the period 2003-2010. The average number of interchanges per team in 2011 was very similar to the average number in 2010, with the implication that the interchange players spent less time on the bench in 2011 (as only three players were actively rotating rather than four).



Table 1 (reprinted from the 2011 AFL Injury Report) shows that in the AFL in 2011 there was a major drop in all hamstring incidence, prevalence and recurrence rates. The objective of the current study was to re-analyse the relationship between hamstring injuries and interchange usage⁸ with 2011 data added to the dataset. In addition, the effects of additional byes in 2011 were also analysed.

Methods

The methods used in this study are very similar to the study conducted and published recently in the *Journal of Science and Medicine and Sport*⁸, and somewhat similar to a previous study published 10 years earlier⁵. Injury data collected between 2003 and 2011 inclusive were extracted from the AFL injury database for analysis. Match performance statistics were obtained from the official statistical providers for the AFL (Champion Data, Melbourne Australia) and also analysed.

Table 1 – Key indicators of hamstring strains over the past ten years

Hamstring injuries	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	10yrA
Incidence	4.4	5.7	6.3	5.2	6.4	6.7	6.6	7.1	6.0	4.8	5.9
Prevalence	15.6	18.6	21.6	18.6	21.8	24.3	25.8	21.8	20.6	16.5	20.5
Severity	3.5	3.2	3.4	3.6	3.4	3.6	3.9	3.1	3.4	3.5	3.5
Recurrence rate (%)	30%	27%	22%	26%	16%	22%	27%	18%	14%	12%	21%

The data set of player games was all players participating in first grade (AFL) matches in seasons 2003 to 2011 inclusive in the regular season from round 2 until round 21 (round 23 in 2011). Player matches in the final round of the regular season were excluded from the analysis as the definition of an injury required a player to miss a match, and half the teams do not have any matches after the final round of the season. Matches in Round 1 were excluded as the analysis was planned to include recent interchange history of individual players and there were no game data prior to round 1 to examine recent interchanges. Analysis was not performed to correlate the index team or player's number of interchanges in a particular game and risk of hamstring injury in that game, as it would be expected to find a strong correlation between low number of interchanges and increased rate of hamstring injuries. This is because when a player/team suffers an injury in a match, that player/team necessarily reduces the number of interchange rotations for the remainder of the match, as the injured player is generally not permitted by medical staff to return to the field.

“...increasing interchanges by the opposition increased the risk of hamstring injury in an individual...”

The determination of hamstring injury diagnosis was made clinically by the club recorders. The defined group of hamstring injuries would therefore include both MRI-positive hamstring strains, cases of MRI-negative posterior thigh pain and hamstring injuries diagnosed clinically which were not imaged. This is in keeping with other injury surveillance systems^{9,10}.

The survey database allows for player injury data to be extracted for further analysis, with the extracted data de-identified. The methods used for this study were non-interventional and conform to the Code of Ethics of the World Medical Association (Declaration of Helsinki) and Australia's National Health and Medical Research Council (NHMRC) guidelines. The survey methods are approved by the AFL Research Board, which is the relevant institutional review board for this type of study.

The multivariate statistical test used was a binary logistic regression analysis in SPSS version 15. Player injury history results for various injuries were binary values as per the previous study⁸. The number of interchanges (self and opposition team) were converted to binary variables (with individual player interchanges off the field over the previous three weeks being grouped into six or fewer and seven or more; opposition interchanges in the match in question was grouped into 59 or less or 60 or more)⁸.

Two other variables were created to analyse the potential effect of quicker turnover of players on the interchange bench in 2011 (due to rotation of three rather than four players) and the potential effect of additional byes in season 2011.

The first additional variable added was 'Median opposition interchange break'. The mean (average) opposition interchange break (i.e. time on bench) is inversely related to number of opposition interchanges (i.e. the more rotations the less time they all spend on the bench). However mean is not the most appropriate measure for this analysis as the subbed player and substitute players both have long bench stints, which would blow out the mean break time. Median break time reduced substantially in 2011 compared to 2010, because the majority of interchanges involved shorter stints on the bench (although sub/subbed players had longer stints). The binary variable 'Median opposition interchange break' was created and split into greater and less than 200 seconds, which was approximately the median break in season 2011.

The other variable created for analysis was 'Number of matches played in the last 24 days' (by the individual), splitting into three matches or less than three matches. Players who had a bye or missed a game for other reasons would not have played three matches in the last 24 days. The number of players going into a game with fewer than three matches in the previous 24 days was down in season 2011 because of the increased number of byes. The variable 'Number of individual interchanges in previous three weeks' was calculated slightly differently in the 2011 analysis. Previously in the 2003-2010 analysis the number used was from the previous three competition rounds, but it was changed to previous 24 days to be consistent with the extra variable.

“...the substitute rule is perhaps more likely to have contributed to the fall in hamstring injury rates than the additional byes...”

Results

An analysis was performed using binary logistic regression with the 2003-2011 data, with the previously analysed variables and the two additional variables of interest included as explanatory factors. The variables from the earlier analysis without 2011 data remained significant predictors of hamstring risk. The two new variables had point estimates suggesting an opposition median interchange break of less than 200 seconds was protective against hamstring injury compared to when the average

opposition player had a longer interchange break (P=0.09); and playing three matches in the previous 24 days had a higher risk of hamstring injury compared to persons playing less than three matches in the previous 24 days (P=0.11); but the wide confidence intervals meant the estimates were imprecise and consistent with no effect (Table 2).

Discussion

The results of the 2011 analysis linking hamstring injury risk and interchange data are not definitive. Some of the variables do not reach statistical significance and are imprecise due to a relatively small number of measurements. Further analysis including the 2012 data should provide greater precision in the analysis. However, the current analysis does suggest some hypotheses that could usefully be explored. The drop in hamstring match injury rate in 2011 *may* have been contributed to both by the sub rule (forcing teams to lose some benefit of rotations in terms of increasing player speed as they were almost too rapid) and also the extras byes (which meant players went in to some games with less baseline fatigue). Both of these factors add to the developing paradigm that speed and fatigue are *both* risk factors for hamstring injury.

Speed and fatigue obviously have the potential to trade-off against each other and previous analysis suggests that speed is likely to be a greater risk factor than fatigue⁸. This is consistent with the observation that a 100m sprinter is more likely to strain a hamstring than a 400m sprinter.

Of the two major changes in 2011, the substitute rule is perhaps more likely to have contributed to the fall in hamstring injury rates than the additional byes based on game speed data from 2011 that supports the premise that rapid rotations led to a slightly slower game in 2011 compared to 2010; and for a priori reasons argued above. However the experience with the substitute rule in 2011 does remind us to guard against too much speculation with respect to changes in the rules and their likely effect on injury rates, as many experts predicted a significant rise in soft tissue injuries in 2011 (which did not eventuate). The inclusion of the 2011 data suggests (although not definitively to date) that: (i) rapid rotation of opposition players (>60 per match) is now very likely to be a risk factor for hamstring strain, through the mechanism of increasing player speed, but, (ii) if rotation is too rapid (<200 second break on interchange bench per player) there is possibly a reduction in the effect of the break because the rest hasn't been for long enough.

Table 2 – Risk factors for hamstring injury 2003-2011 (with low tolerance for entry)

RISK FACTOR	Significance (p value)	Relative risk	Low 95% CI	High 95% CI	Potential relevance
Recent hamstring injury (highest increased risk)	<.01	4.69	3.48	6.33	Recent hamstring injury is by far the greatest risk factor for a recurrent hamstring injury
Past ACL injury (increased risk)	<.01	1.61	1.17	2.20	Past knee reconstruction now a well-established risk factor
Past calf injury (increased risk)	<.01	1.57	1.26	1.97	Players who have had calf injuries also susceptible to hamstring injury
Opposition team has greater than 60 interchanges (increased risk)	<.01	1.34	1.08	1.67	Opposition rapidly interchanging (>60 / game) probably increases hamstring risk by increasing speed at which average opposition player is moving at
Player has had 7 or more interchanges in last 24 days (slightly protective)	.03	.76	.60	.97	Player previous high recent interchanges may be slightly protective as player himself possibly less fatigued (although this factor less clear)
Player has had three or more matches in last 24 days (slightly increased risk, borderline significance)	.11	1.19	.96	1.46	Resting coming into game may possibly be protective against overuse/fatigue (although this factor not statistically significant)
Opposition median interchange break less than 200 seconds (slightly protective, borderline significance)	.09	.62	.36	1.08	Opposition interchanging too rapidly (< 200 seconds on bench for median player) may mean the benefit of rest in terms of increasing opposition player speed is minimised (although this factor also borderline significance)

Fatigue has previously been cited as a risk factor for injury in team sport^{9,11}. It is plausible that increased average player speed^{12,13} and increased player fatigue are both independent risk factors for hamstring strain. The level of both risk factors are likely to be influenced by the number of player interchanges.

This study suggests that AFL players who play all games over a three week period and do not regularly interchange off the field are slightly more prone to hamstring injury over the coming weeks (i.e. that fatigue is a risk factor for injury). However, even more so, it suggests that an increasing number of interchanges by the opposition also increases individual risk of hamstring injury (i.e. that speed is a risk factor for injury). The negative effect of increasing opposition interchanges possibly is reduced if the median break on the interchange bench is less than 200 seconds, as this may be approaching the minimum amount of time required to get the beneficial effect of a temporary rest. The results of the analysis including 2011 data are consistent with the model that increasing interchange use may reduce fatigue but also increase average player speed¹² and therefore may have a

complicated relationship with the risk of hamstring strain, being somewhat protective for the interchanged player but harmful for his opponent(s). Because of the complicated relationships involved and the trade-off between fatigue and speed, it is difficult to predict the exact outcome that further limits to interchanges would have on hamstring injury rates. Suggestions for further limits have been proposed (e.g. limited absolute numbers of interchanges, permitting interchanges only after goals are scored or changing the nature of the bench to two interchanges and two substitute players). If any further changes are made, ongoing injury surveillance to measure the outcome of any rule changes, as has been done with rule changes to reduce knee posterior cruciate injuries¹⁴, should be undertaken. Analysis, including the 2012 data, should provide further understanding of these complicated relationships.

Dr John Orchard, Dr Hugh Seward, Jessica Orchard, Associate Professor Tim Driscoll

References, as indicated within the article, are available at sma.org.au/publications/sport-health/

Peak performance requires more than skill alone

Developed specifically for endurance athletes, Endura Rehydration is an exclusive electrolyte formula to help athletes perform at their peak, promote endurance and optimise hydration.



The electrolyte ratio difference

Endura Rehydration contains a full spectrum of electrolytes in ratios specifically chosen for sports rehydration. Electrolyte imbalance may contribute to intracellular muscle dehydration which can impair energy production. Endura Rehydration contains higher levels of intracellular electrolytes (magnesium and potassium) than many sports formulas to specifically target intracellular muscle hydration. Endura also provides the AIS recommended percentages of sodium and carbohydrates to assist rapid stomach emptying for fast hydration.¹

The importance of magnesium

Endura Rehydration provides a high concentration of Meta Mag[®], a highly absorbable patented form of magnesium to help shorten muscle recovery time and prevent muscular cramps and pains. Unlike many other forms of magnesium, Meta Mag[®] dissociates intracellularly, rather than in the digestive system.² This means higher absorption and maximum results for the athlete, without gastric discomfort; an imperative attribute for formulations taken before or during prolonged exercise.

Isotonic vs hypertonic prescribing

Endura Rehydration can be prescribed as an isotonic or hypertonic dose depending on the needs of the athlete. When prepared as a 350 mL isotonic drink, Endura Rehydration has an osmolarity in a similar range to an athlete's own body fluids. This enables rapid absorption for fast rehydration during exercise whilst supplying fast and slow release carbohydrates for energy. When prepared as a hypertonic dose, Endura Rehydration provides a higher carbohydrate load per 200 mL for glycogen replacement making it ideal for more frequent dosing during pre-event loading and recovery periods.

Key applications for sports health professionals

The following patients may benefit from using Endura Rehydration:

- Those who need to perform in peak condition and support their training and competing demands.
- Those who need to support their body's hydration requirements.
- Those who want to help shorten muscle recovery time.
- Those requiring relief from muscular pain and cramps.



For more information call the Health World
Technical Support team on
1800 777 648 or visit www.endura.com.au

1. http://www.ausport.gov.au/ais/nutrition/factsheets/hydration2/fluid_-_who_needs_it
2. Schuette SA, Lashner BA, Janghorbani M. Bioavailability of magnesium diglycinate vs magnesium oxide in patients with ileal resection. JPEN J Parenter Enteral Nutr. 1994;18(5):430-435.

Alternatives to prohibition



The Global Commission on Drug Policy¹'s declaration that the prohibition led 'war on drugs' had failed raises an uncomfortable question – will the 'war on drugs in sport' fail in the same way? Dr Jason Mazanov discusses.

According to Australia 21, an independent non-profit organisation that promotes multidisciplinary research and inquiry on issues of strategic importance to Australia in the 21st century, the 'war on drugs' in Australia has also failed² and offers *Alternatives to Prohibition*³. If prohibition has failed for Australian society, prohibition for drugs in Australian sport is likely to go the same way.

“... sport needs to consider alternative ways of managing drugs rather than repeat the failure of prohibitionist illicit drug control.”

This article summarises the Australia 21 arguments and tests them with regards to drugs in sport. Australia 21's *Alternatives to Prohibition* is considered and tested with regards to sport. The article concludes with a call for Sports Medicine Australia to be part of the broader discussion about drug control in sport and society.

“With the evidence indicating that losing the 'war on drugs in sport' is inevitable, SMA needs to act.”

Australia 21 – The prohibition of illicit drugs

The main thrust of the report explores the consequences of criminalising illicit drug use (prohibition) and the harms arising from this approach. It describes the three pillars of Australian drug control:

- Reducing availability through enforcement (supply reduction).
- Reducing demand through prevention and treatment (demand reduction).
- Reducing the harms to those who do use (harm reduction).

Australia 21 asserts practice relies heavily on supply reduction at the expense of demand and harm reduction, emphasising policing and prosecution at the expense of drug education and getting people off drugs.

Evidence is then offered that supply reduction has failed given more drugs are available more cheaply now than in the past. Supply has exceeded demand and sellers are competing for business by lowering prices.

“There has never been an opportunity to try alternative drug control in sport.”

Tobacco and alcohol are highlighted as being both responsible for significant health, social and economic harms and controlled with health, social and economic measures rather than prohibition and punishment. The argument is that if harms from alcohol and tobacco can be controlled with health and social measures, similar drugs can be managed equally well using the same methods.

The report is particularly critical of the language of the drug's debate being a 'war' against an enemy rather than an effort to promote the vitality of citizens. It is claimed this confuses and distracts discussion from responding to drug abuse.

The report concludes with recommendations aimed at stimulating debate and lobbying governments towards alternatives to prohibition. Harm minimisation is offered as one alternative.

Impressions of the report

While sensational to the lay-person, the arguments are well known in the academic and policy communities. The report reintroduces the ideas with an aim to change the overarching policy paradigm from prohibition to something else.

Prohibition of drugs in sport

Two of the three pillars of drug control are reflected in the World AntiDoping Code; supply reduction (sanction for possession or trafficking) and demand reduction (sanction for use). There is no obvious harm reduction element in the Code. At its core, drug control in sport is prohibitionist, relying on a complex administrative system to detect and sanction athletes⁴.

Harm reduction in Australian sport is mixed. The Australian Sports AntiDoping Authority (ASADA) has introduced a counselling mechanism for athletes sanctioned for an antidoping rule violation. However, athletes with a doping sanction are stripped of scholarships or lose their jobs. These actions seem at odds with the notion of harm reduction recommended by Australia 21.

The ability of ASADA, Customs and Australian police services to intercept doping supplies has been an area of success in Australia. Internationally, though, organised crime has showed increasing interest in supply of doping substances. Italy, which has criminalised doping, already has a multi-billion Euro black market⁵ and there is no reason to expect Australia is any different. Just before the 2000 Olympics, one thousand phials

of erythropoietin (EPO), worth about \$1 million, were stolen from Alice Springs Base Hospital and diverted to the black market⁶.

There has never been an opportunity to try alternative drug control in sport. One instructive example is the treatment approach taken by the Australian Football League and their declining rates of illicit drug use⁷. It remains to be seen whether a treatment based approach would lead to declining rates of doping.

While tobacco has been largely eliminated from Australian sport, alcohol in sport continues to be a problem (e.g. violence and sexual assaults). Controls around alcohol in sport tend to focus on health or social interventions, such as teaching athletes and players about safe alcohol consumption practice. It is yet to be established the effect a similar approach might have in relation to doping.

Athletes who dope are referred to as 'cheats', undermining the integrity of sport. While less evocative than an 'enemy', it demonises athletes who dope as deviants to be expelled from sport. This makes anti-doping something which is done 'to' people unworthy of the title athlete, rather than 'for' the best interests of athletes⁸. Such an approach compromises the claim anti-doping protects the health and well-being of athletes in the 'war on drugs in sport'.

Given these parallels, the 'war on drugs' and the 'war on drugs in sport' have some similarity. If Australia 21 is right, the 'war on drugs in sport' is going to end the same way.

With this warning sport needs to consider alternative ways of managing drugs rather than repeat the failure of prohibitionist illicit drug control. Like the 'war on drugs', sport seems mired in talking about prohibition rather than different ways of approaching the problem. Australia 21 offers an options paper as a starting point for this discussion.

Australia 21 – Alternatives to prohibition

Unlike the first report, Australia 21 allows a case for prohibition. The report is very clear this was the view of one participant.

The case for prohibition suggests 1980s harm minimisation led to Australia's contemporary drug problem. Treatment is seen as impractical given the overburdened health system. The participant suggests Australia should consolidate and strengthen its prohibitionist stance.

The report goes on to discuss international experience from Portugal and Scandinavia with alternative drug control, concluding that establishing objectives to drive information gathering is needed. What is to be done in the interim is unclear.



“Core to this road map is the rejection of the idea that Australia can be made ‘drug free’.”

A road map is established for moving discussion into action. Australia 21 calls for policies based on evidence rather than intuition or prejudice (characterised as the main rationales for prohibition), engaging with rather than criminalising youth, efficient and effective use of funds, and a national summit. Core to this road map is the rejection of the idea that Australia can be made ‘drug free’.

Reform options are offered, with special attention given to Professor David Penington’s proposal to decriminalise cannabis and ecstasy for those aged 16 and over, and to regulate their supply like other prescription drugs. This is based on drug control being ‘a medical problem’ and that illicit substances should be regulated the same way as other pharmaceutical agents.

The conclusions offered reiterate the failure of prohibition and that the mix of alternative strategies working internationally should be considered in Australia.

Impressions of the report

The presence of a single dissenting voice was an important part of this document. The arguments supporting prohibition appeared to be personal convictions rather than a reasoned case. That is, the dissenting voice *believed* in drug control based on drug use being wrong or immoral.

This made the opposing arguments appear equally belief driven. The rest of the Roundtable appeared to *believe* in harm minimisation. This was demonstrated in the tight focus of alternatives around placing drug control in the hands of the medical community.

Three problems are apparent with handing over drug control to the medical community. Firstly, medical harm minimisation says disease free long life should be the goal, which may be at odds with other views of health from, say, Chinese medicine or different religions. Secondly, this deepens the medicalisation of society where medicine is used to solve social problems (e.g. prescribing Ritalin for ‘difficult children’ with parents working long hours). Thirdly, medical harm minimisation presupposes those with medical training are more able to decide what is ‘right’ for others. The difference between clinical, research and professional ethics alone suggests relying on one view of ‘right’ is a problem.

The focus on a single idea that requires belief (for example, belief in medicine to act ethically in the best interests of society)

made the report less compelling than it could have been. The case for alternatives to prohibition would be more convincing if a range of approaches were considered.

Alternatives to prohibition for drugs in sport

The only alternative to prohibition offered in the academic literature is, unsurprisingly, harm minimisation. Indeed, it is the model offered as consistent with the vision and mission of SMA⁹.

Harm minimisation is an invention of medicine which prioritises medical outcomes. It also has the character of something done ‘to’ rather than ‘for’ athletes, by telling them their long term medical health is more important than anything else. Athletes have a different view of their long term health; sport health professionals know how many athletes are willing to sacrifice short and long term health for performance. Prioritising health is also at odds with new evidence that Australians see health as being an incidental part of sport¹⁰.

“The only alternative to prohibition offered in the academic literature is, unsurprisingly, harm minimisation.”

Putting health to one side, sport has other well defined values, such as fun and joy. A drug control policy that emphasises the impact of substance use on stopping others from enjoying sport may be idealised, but represents a very different way of thinking about this issue. A policy that puts enjoying sport at the forefront may help bring back the importance of taking part over winning.

Sport also involves the broader community. Using business language, these stakeholders can be broadly divided into sports producers (athletes, their support personnel and their sports organisations) and sports consumers (fans, broadcasters and sponsors). Thinking about how drug control impacts upon the value of sport to consumers is worth considering. For example, eliminating doping scandal by moving away from anti-doping may, paradoxically, see a greater focus on and appreciation of the art rather than the science of sport.

“If prohibition has failed for Australian society, prohibition for drugs in Australian sport is likely to go the same way.”

Why SMA should get involved

As a world leading sports medicine organisation SMA has significant knowledge and experience around the role of drugs in sport. SMA can use this experience to help the debate about drug control in society.

Firstly, sports medicine uses the performance-therapy nexus. SMA members want to see athletes do as well as they can while minimising risks to health. In this sense, sports medicine is something done *for* rather than *to* athletes.

Secondly, SMA is a pluralistic medical organisation. SMA accounts for the different views of sport and health taken by different member organisations. This means SMA has experience with building approaches to helping athletes manage their sport *and* their health.

Thirdly, SMA is implicitly endorsing prohibition by inaction rather than action. SMA is still without a formal position statement on how we think drugs in sport should be managed.

With the evidence indicating that losing the 'war on drugs in sport' is inevitable, SMA needs to act. Two alternatives face SMA. The first is that SMA deploys its skill and experience to help avoid the failings of the 'war on drugs'. The second is that SMA develops alternative approaches.

Whichever approach SMA takes it responds to Australia 21's call to action and hopefully a better way to control drugs in sport and society.

Dr Jason Mazanov

Senior Lecturer, UNSW-Canberra
Director of SMA ACT

References, as indicated within the article, are available at sma.org.au/publications/sport-health

This article was drafted prior to and through the Lance Armstrong scandal, which has forced the international sporting community to start reflecting on the 'war on drugs in sport'. The most profound reflection to emerge that informs this article is the declaration that the 'war on drugs in sport' is unwinnable by WADA President, John Fahey. The implications of such a declaration are far-reaching, supporting the conclusions arising from the analysis of the Australian 21 papers – we need to find new ways to make anti-doping work or find new ways to manage the role of drugs in sport.

Healthcare Opportunities in Singapore



Singapore
General Hospital
SingHealth

**EDUCATE TO EMPOWER
INNOVATE TO ADVANCE**

Reputed for its medical excellence, SGH is Singapore's flagship tertiary hospital. It is also an Academic Medical Centre, dedicated to research and the use of evidence in practice. Each year, over 1 million people benefit from advanced medical care delivered on its campus by its 8,000-strong workforce

Podiatrists – Entry and Specialist grades

We are recruiting to expand our clinical team to 20 podiatrists. Podiatry is a growing and developing service within SGH and we are building a first class team for now and the future, to influence and accelerate our progress.

Some qualities are essential. You will be committed to delivering the highest standards of safe and effective care at all times. You will be thorough, reflective and analytical with a wish to improve continuously. Above all, you will possess a genuine team spirit. All in all we are looking for people who can demonstrate significant potential.

In return, we will offer fair, challenging and rewarding employment. You will be supported fully during an induction period while you build confidence and, thereafter, by a long-term support framework. We will develop you towards an excellent career path and will seek and value your ideas from day 1.

If you possess the right qualities and is interested to apply, you may submit an online application at:

Email: loh.shu.ying@sgh.com.sg
Website: <http://www.sgh.com.sg/JoinUs>

Only shortlisted candidates will be notified.

The exercise pill



Exercise physiologist, Dr Ian Gillam discusses how accredited exercise physiologists and exercise scientists can improve the health of Australians through the use of the ‘exercise pill’.

“... it is never too late to start an activity program.”

In Australia, there is concern about the increasing incidence of obesity and other chronic diseases¹ and their potential burden on healthcare services. Australia’s rising life expectancy is also expected to be a major contributing factor to the increasing incidence of obesity and associated metabolic and cardiovascular disease and other chronic diseases². Exercise provides an underutilised treatment modality for both the prevention, and the management of chronic disease, which, if given a higher priority by government, through increased funding and support, could improve the health and quality of life of many older Australians. Accredited exercise physiologists, are university qualified allied health professionals who are the most qualified professional group to prescribe and deliver exercise interventions to the ageing population and individuals who are at risk of or who have complex and

chronic conditions. Exercise scientists also have an important role to play by working with the apparently healthy community through the prescription and delivery of exercise programs and promoting healthy lifestyles.

“GPs rarely make an assessment of a client’s current activity levels¹² and specific guidelines are generally not provided in a standard medical consultation.”

The increasing burden of chronic disease in Australia and its economic impact

The rising incidence of obesity and particularly metabolic disease⁶ is now considered one of the major health concerns across the western world. Based on published data from the Australian Institute of Health and Welfare (AIHW) over the past decade to 2003, cancer, cardiovascular disease and mental disorders are the major causes of disability due to ill health. However the projected increased incidence of diabetes and neurological disorders in 2003, and diabetes and dementia in 2010 over the next decade to 2023 is of special concern^{1,3}.

The most recent data available on the incidence of obesity and metabolic disease were published in the Victorian Health Monitor Report in September 2012⁴. This report found that 63 per cent of Victorians aged 18–75 years were classified as overweight or obese based on body mass index (BMI), with a higher incidence in women, and in older Victorians. One in five Victorians met the International Diabetes Federation diagnostic criteria for ‘metabolic syndrome’, with 25 per cent,

57 per cent and 4.6 per cent respectively being diagnosed with hypertension, dyslipidemia and type II diabetes. The increasing prevalence of obesity not only impacts an individual’s metabolic and cardiovascular health, but it also contributes to the risk of developing degenerative joint diseases, such as osteoarthritis in the lower limbs.

“... this ‘miracle drug’ often receives little respect from doctors, politicians, health administrators or society as a public health priority.”

The report by the Department of Health and Ageing⁵ showed that health expenditure in 2010–2011 was \$130 billion, which equated to \$5,796 per person and 9.3 per cent of Australia’s gross domestic product. Individuals, private health insurers and non-government sources funded 31 per cent of these health costs which is of concern given that overall health care costs are expected to increase dramatically in the next two decades due mainly to the ageing Australian population and the projected increase in population growth⁶. If the increase in health care costs was to be transferred back to individuals as appropriate, either in direct payments or through increased health insurance premiums, there would be an increased incentive for individuals to adopt more active and healthy lifestyles.

Inactivity: its effect on the incidence and genesis of chronic disease

There is now irrefutable evidence that physical inactivity plays a major role in the pathogenesis of chronic disease^{6,9}. While it is important that we emphasise the benefits of exercise, we also need to focus on the risks of inactivity on health and longevity⁷. Inactivity alone is estimated to cause 5.3 million global deaths per year compared to 5.1 million global deaths per year for smoking⁵. The current global prevalence of inactivity is greater than that of smoking (i.e. 35 per cent compared to 26 per cent for smoking), and this gap might be expected to widen in the next decade if smoking rates in Australia continue to decline¹. The focus should now be on making the risks associated with inactivity a major health priority. In Australia, a 2006 study by Merom⁸ et al, found that only 44 per cent of Australian men and 36 per cent of women were achieving sufficient physical activity required to maintain health and that this prevalence had changed little from 1989 to 2000. How to increase levels of physical activity continues to provide a major challenge, but also an opportunity, for health policy makers and governments around the globe⁹.

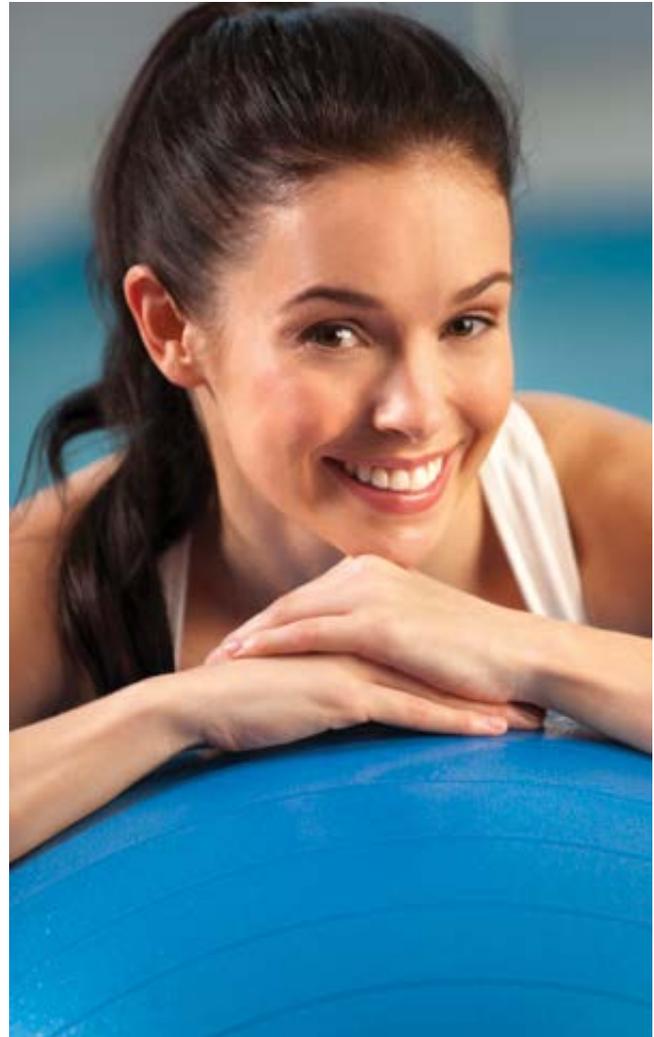


Exercise: ‘The miracle drug’ – and its health benefits

In a recent editorial in the *Canadian Family Physician* by Pimlott¹⁰, exercise was described as ‘the miracle drug’, due to its ability to increase the capacity of almost all organ systems in the body. Exercise has alternatively been described as the ‘workout pill’; however, unlike prescription medications that have targeted indications, exercise has widespread health benefits, with very few contraindications and side effects¹¹. Indeed, there is increasing evidence, that the more of the ‘exercise pill’ you take – the healthier you will be¹¹. Exercise is medicine® (EIM), exerciseismedicine.org.au, an initiative pioneered by the American College of Sports Medicine in 2009¹², has now been adopted by Exercise & Sports Science Australia (ESSA) to encourage the health and medical community to recognise ‘inactivity as a modifiable vital sign’ and to encourage the prescription of exercise to every patient at every visit. It is an important strategy for disease prevention and it should be seen as a standard treatment paradigm for all health providers in Australia to improve community health.

“Working with other health professionals, the exercise physiologist can play a key role in assisting the client achieve the desired health outcomes.”

Despite the increasing evidence of the health benefits of exercise, this ‘miracle drug’ often receives little respect from doctors, politicians, health administrators or society as a public health priority^{7,12}. The Australian National Preventive Health Agency (ANPHA), was established in 2012 by the Commonwealth Government in partnership with State and Territory Governments with a goal ‘to strengthen Australia’s investment in preventive health and help turn the tide on the rising prevalence of preventable chronic diseases’. The primary targets developed by the ANPHA were to develop strategies to reduce the health risks associated with obesity, smoking and alcohol consumption. In February 2012 the ANPHA launched the ‘Swap It, Don’t Stop It’ campaign which is designed to encourage individuals to swap from inactive behaviours to active behaviours, to reduce portion sizes and to make healthier food choices. The goal was to reduce the incidence of obesity and associated chronic diseases. While this program is seen as important to reduce inactive behaviours, programs to increase levels of physical activity to meet the recommended 150 minutes/week of moderate physical activity are essential to achieve measurable health outcomes, and this must be seen as an important priority for the future.



There is now strong evidence that physical activity reduces the incidence of coronary heart disease, hypertension¹³, type II diabetes¹⁴, stroke, breast and colon cancer¹⁵, osteoporosis, depression and dementia, all of which result in a shortened life expectancy¹⁶. In addition, exercise is not only an essential element in the management of chronic disease; it is also an important adjunct treatment for some chronic diseases. For example, exercise is efficacious for patients with cancer to reduce the side effects associated with drug therapy, such as the induced fatigue with chemo- and radiotherapy¹⁵. Participation in sport, as a subset of exercise, has also been shown to reduce all-cause mortality by 20 to 40 per cent, by providing similar health benefits to regular physical activity¹⁷. Sporting pursuits should be encouraged and supported for children and adults, as a medium to promote lifelong physical activity.



“Australia is currently the only country in the world where consultations with an accredited exercise physiologist may be provided with a rebate through the Medicare system for GP-referred clients with a chronic disease.”

Physical activity, fitness and health throughout the lifespan

An increasing number of studies have shown that maintaining cardiorespiratory fitness and physical activity throughout the lifespan is important to maintain future health. A longitudinal study of middle aged adults, from 49 to 65 years, showed that those individuals in the highest quintile of fitness level had 45 per cent lower incidence of eight chronic conditions, compared to those in the lowest fitness quintile¹⁸. The conditions included in this analysis were diabetes, ischemic heart disease, congestive heart failure, cancer of the colon, lung cancer, chronic obstructive lung disease, chronic kidney disease and Alzheimer’s disease¹⁸. In another study over 6.2 years, adults over the age of 65 years and without any evidence of cognitive impairment, showed that individuals who exercised more than three times per week, compared to those who did not achieve this exercise target, had a 38 per cent reduction in the degree of cognitive decline, which was statistically significant ($p=0.004$)¹⁹. Finally, a study in individuals over the age of 75 years showed that those who adopted an active leisure activity, a healthy diet, and who had a good social network survived an average of 5.4 years longer than those who did not adopt these healthy lifestyle behaviours²⁰. The conclusion that should be drawn from these three studies is that maintaining an active lifestyle throughout life is essential for long-term health and that it is never too late to start an activity program.

Maintaining cardiorespiratory fitness is more important than changes in body weight for cardiorespiratory health and longevity

Increases in visceral fat levels and abdominal obesity have been shown to be primarily responsible for the metabolic dysfunction, typical of metabolic syndrome²¹. Based on this evidence a 5 per cent reduction in body weight²² is often used by general practitioners (GPs) as one goal to improve a patient’s cardiometabolic health. This is despite the fact that body weight is a poor indicator of changes in abdominal fat levels²³ and that significant improvements in cardiometabolic health can occur without any change in body weight²⁴.

GPs rarely make an assessment of a client’s current activity levels¹² and specific guidelines are generally not provided in a standard medical consultation.

A recent study by Lee et al. compared the effect of changes in BMI and cardiorespiratory fitness (CRF) on all-cause mortality (ACM) and cardiovascular disease (CVD) mortality over 11 years of follow-up²⁵. By analysing data from 14,345 men from the Aerobics Centre Longitudinal Study, the changes in CRF and BMI were divided into ‘thirds’ over the 11 years of follow-up as follows: Loss, Stable and Gain. The three subsets of data were then statistically analysed, after adjusting for a wide range of confounding baseline and lifestyle variables, in relation to ACM and CVD mortality. The results showed that men who maintained their CRF had a lower risk of both ACM and CVD mortality by 30 per cent and 28 per cent respectively, when compared to those men that lost fitness. For men who increased their CRF, the reduction in ACM and CVD mortality was 40 and 44 per cent respectively, compared to men who lost CRF. For each 1- MET improvement in CRF, there was a 15 per cent and 19 per cent lower risk of ACM and CVD mortality respectively, after adjusting for any change in BMI. In comparison, the group that increased their BMI were not at increased risk of ACM, however, there was a 15 per cent increase in CVD mortality, when compared to those men who decreased their BMI. Men who decreased their CRF, irrespective of any change in BMI, had a higher risk of ACM and CVD mortality risk. However, the most important finding of this study was that when the change in BMI data was adjusted for any increase in CRF, the increase in ACM and CVD mortality rates were attenuated, and not statistically significant. Therefore if you maintain or increase your CRF significant reductions in ACM and CVD mortality are realised irrespective of any increases in BMI.

How might exercise mediate these improvements in health?

A recent review by Fadini et al proposes a number of mechanisms by which exercise can exert the profound cellular changes that result in improved metabolic health and longevity²⁶. The most likely of these, is AMP-activated protein kinase (AMPK), a fuel-sensing enzyme, which is activated by stresses that increase the intracellular AMP/ATP ratio and the intracellular concentration of calcium, both of which occur during exercise²⁷. An increase in AMPK during exercise sets off a cascade of intracellular events that includes activation of a sirtuin called SIRT1 (the Silent Information Regulator).

Interestingly, acute AMPK activation occurs at exercise intensities above 60 per cent of maximal aerobic capacity, a level that is considered to be the aerobic threshold for training adaptations to occur, or during prolonged aerobic exercise. Importantly, AMPK activation counteracts many of the metabolic disturbances observed in metabolic syndrome including insulin resistance and angiogenesis, thus improving health and potentially increasing longevity. Metformin, the anti-diabetic drug used to treat insulin resistance, activates AMPK so acting as a mimetic for exercise²⁶. Increases in SIRT1 have been shown to increase longevity in response to calorie restriction and the antioxidant resveratrol²⁵. As Alzheimer's disease and dementia have been linked to insulin resistance, and there is also evidence that SIRT1 activation by resveratrol provides neuronal protection in rats, it has been proposed that exercise-induced increases in AMPK may provide the mechanism for the lower incidence of neurodegenerative disease in active individuals^{19,26}.

With this mounting level of evidence on the role of the 'exercise pill', it is surprising that many GPs fail to prescribe this treatment to their patients. It is incredulous that the healthcare system also appears not to provide adequate

recognition of the potential financial savings to the health care budget and productivity benefits that could be achieved with a healthier workforce²⁸. In addition, governments and health insurance companies have failed to provide adequate incentives to provide community physical activity programs, and initiatives for professionals, such as accredited exercise physiologists, to assist with the exercise management of individuals with chronic disease¹². A health industry that is focused on hospital-based care, procedures, such as bariatric surgery to 'treat' obesity, and costly, government subsidised pharmaceuticals, fails to address the future health needs of Australia.

“Inactivity alone is estimated to cause 5.3 million global deaths per year compared to 5.1 million global deaths per year for smoking⁵.”

What role do medical practitioners have in the prescription of exercise?

Medical practitioners regard the promotion of a healthy lifestyle, including exercise advice as important²⁹. However a 1987 study of 23 medical practices in the United Kingdom found that only 6 per cent of patients had ever received exercise advice from their GP as part of their consultation²⁹. Two more recent studies in the United States of America³⁰ and Canada^{31,32} have shown that 36 per cent and 70 per cent of patients respectively had received exercise advice from their family physician, so it appears that the health benefits of physical activity are increasingly being recognised. The major barriers to GPs providing exercise prescription advice are inadequate time, lack of the necessary skills and adequate reimbursement for the time involved in providing exercise advice³⁰. A lack of education and practical skills in exercise prescription in many medical programs globally is also a major barrier, and most physicians will often prefer to refer onto another medical or an appropriately qualified allied health professional, such as an accredited exercise physiologist³². Australia is currently the only country in the world where consultations with an accredited exercise physiologist may be provided with a rebate through the Medicare system for GP-referred clients with a chronic disease. Patients may be referred by their GP to an accredited exercise physiologist for up to five appointments per year, under a GP Management Plan and a Team Care Arrangement (MBS Item 721), and for individual or group allied health services (MBS Items 10953 and 81100–81125 respectively).





“... if you maintain or increase your CRF significant reductions in ACM and CVD mortality are realised irrespective of any increases in BMI.”

The importance of recording physical inactivity as a modifiable, vital sign in any medical or clinical consultation is a major initiative of the Exercise is medicine® program^{12,33}. In addition, the assessment of cardiorespiratory fitness as a predictor of cardiometabolic health and longevity has been previously emphasised²⁴. A simple self-paced step test to estimate CRF that can be conducted in a primary care setting to reliably predict CRF has been validated³⁴. The Canadian STEPS program includes an individualised exercise prescription and an assessment of CRF, which has been demonstrated to not only increase physical activity levels and CRF, but also result in favourable health outcomes over a 12-month period³⁵. This is an approach that could be used by clinicians to assess the

ongoing cardiometabolic health of their patients, as well as providing feedback and incentives to clients to maintain an active lifestyle.

The role of the accredited exercise physiologist and the exercise scientist, in providing exercise advice to improve the health of Australians

As a medical practitioner's time is limited, accredited exercise physiologists can provide a referral pathway to provide an individualised exercise prescription for clients with a chronic disease in the primary care setting. This will include a physical assessment and a risk stratification to undertake an exercise program consistent with the objectives outlined in the GP team care arrangement and the client's health care plan. Working with other health professionals, the exercise physiologist can play a key role in assisting the client achieve the desired health outcomes.



Exercise scientists can design exercise and physical activity programs to prevent the development of chronic disease and undertake cardiorespiratory fitness assessments. Under the supervision of a medical practitioner, accredited exercise physiologist or other suitably qualified allied health professional, the exercise scientist can also deliver and supervise exercise programs for individuals with a chronic disease. Exercise scientists have an important role in promoting community physical activity programs to improve health and wellbeing.

“With this mounting level of evidence on the role of the ‘exercise pill’, it is surprising that many GPs fail to prescribe this treatment to their patients. It is incredulous that the healthcare system also appears not to provide adequate recognition of the potential financial savings to the health care budget and productivity benefits that could be achieved with a healthier workforce²⁸.”

Accredited exercise physiologists

University qualified allied health professionals, who specialise in clinical exercise interventions for persons at high-risk of developing, or with existing chronic and complex medical conditions and injuries. Accredited exercise physiologists are the most qualified health professional to prescribe exercise for people with chronic disease.

Exercise scientists

University qualified graduates in exercise and sports science or human movement studies. They have specialist knowledge and skills in the design, implementation and evaluation of exercise and physical activity to prevent chronic disease. Exercise scientists can also deliver an exercise program designed by an accredited exercise physiologist, a medical practitioner or appropriately qualified allied health professional for clients with a chronic disease or injury.

“If the increase in health care costs was to be transferred back to individuals... there would be an increased incentive for individuals to adopt more active and healthy lifestyles.”

A truly inter-disciplinary system with appropriate cross-referral pathways is a health care system that can address the growing health concerns of the future. The exercise pill not only provides a modality to optimise health as we age, but also provides a multi-system treatment for the prevention and management of many of the chronic diseases that will affect the future health of Australians.

To find an accredited exercise physiologist visit essa.org.au

Dr Ian Gillam

Ian Gillam PhD is currently an industry development officer for Exercise & Sports Science Australia and he is an accredited exercise physiologist and a sports physiologist. Prior to 2011 he worked in three large inter-disciplinary medical practices for 12 years. He was also a consultant to a number of elite sports teams, including the AFL Melbourne Demons, Tennis Australia and the Drapac Professional cycling team. He is a Fellow of Sports Medicine Australia and Exercise and Sports Science Australia. Ian would like to thank Melanie Sharman, the industry development manager at ESSA for her comments and assistance in helping prepare this article.

References, as indicated within the article, are available at sma.org.au/publications/sport-health

•• THE NEW AND IMPROVED UNLOADER ONE® BY ÖSSUR

Unloader One - the new generation in OA knee pain relief

- Clinically proven to reduce pain and improve function (1)
- The lightest (under 450g) and lowest profile OA brace on the market
- Comfortable and securely held in place with patented silicone liners

Clinically Proven Efficacy - New Unloader One clinical studies presented at AAOS 2010.

Unloader One =

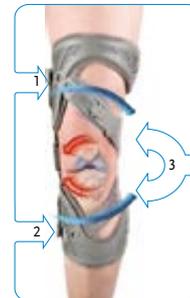
- Decreased pain
- Improvement in function
- Reduction in usage of pain management

(1). Briggs KK, Matheny LM, Steadman JR, Aultman H: Use of an Unloader Brace for medial or lateral compartment Osteoarthritis of the Knee. Steadman Philippon Research Institute, Vail, CO. <http://www3.aaos.org/education/anmeet/anmt2010/podium/podium.cfm?Pevent=638>.

How it works:



Knee OA without bracing (bone-on-bone contact)



The 3-Point Leverage System



Knee OA with bracing (space created between bones)

“Braces only work if they are worn”

- The proven, 3-point 'unloading force' is applied only as the knee extends during walking
- Pressures release when the knee is flexed

THE RESULT = more comfort = more patient compliance = more pain relief = UNLOADER ONE



The sport of saving lives

In the afterglow of the men's K4 1000m gold medal win at the London Olympic Games, crewed by surf lifesavers, physiotherapist Troy Eady, presents a case study from the service which has become a sport in its own right.

Courtney Hancock has, in recent years, become the number one ironwoman in the sport of surf lifesaving and the closest thing the sport has to a professional athlete. Her bread-and-butter event is a 12 to 15 minute race involving a board paddle leg, a ski leg, and a swim leg of varying distances, with beach run transitions in between. Each water leg travels out through the surf and returns. It is this style of short course race that culminates in the end-of-season Australian Surf Life Saving Championships, known as 'Aussies', an open event with five competition days.

“... the sport still relies heavily on the outdated theory of ‘more is better’ in terms of training load.”

At Aussies, competitors go through a number of heats, semi-finals, and a final for each event. It's expected that Courtney would race in a number of team and individual races – all with heats, semis and finals – and as a member of the most successful club in Australia, it's likely she will make the finals of multiple races. In the lead up to Aussies, the summer season also contains the Coolangatta Gold, an endurance race in which the men's winner takes around four and a half hours to complete and women's winner three hours, as well as the Nutri-Grain Ironman and Ironwoman series. The series comprises six rounds of varying formats that last up to three hours of racing each round. The rounds are held around the country: one week the athletes battle the large, powerful and cold surf of the southern ocean at Portsea in Victoria, while the next week it is the searing dry heat of the Western Australian coast.

A typical training program for an athlete wanting to be competitive in all facets of the sport is two to three sessions a day, six days a week. The weekly program is approximately 30km of squad swimming, 50km of ski paddling, 25km on the board, and up to 50km of running. The week generally ends with a multidisciplinary session in a semi-competitive format. These sessions are across still water and surf, and the running is between track and sand. Courtney will also have a couple of gym sessions and a yoga class.

As with many endurance athletes, the most common injury seen is overuse, with the most common joint affected being the shoulder, as three of the disciplines predominately involve the upper body with only one involving the lower body.

The overuse injuries will often have an incident that can be identified as the moment the affected part became painful, which often occurs while travelling through the surf. This is how our sport differs to the world of pool swimming, flat water kayaking or track running.

The biomechanical or technique change that can be easily identified as a cause or cure to a kayak paddler on a lake becomes significantly more complex when the same person attempts to paddle a ski through the surf and has to wrestle with moving water, interrupted momentum, and changing stroke length. We do not have the luxury of every movement being technically the same. Australia's recent Olympic kayak team was made up of a number of surf lifesaving athletes, as were the men's and women's representatives in the 10km open water swim; one of the men is our best ever ironman, with more Australian Ironman titles than any other. All of these athletes have come through big blocks of training and big schedules at carnivals, and competed and trained in demanding environments. Therefore, it is no surprise they float to the top (pardon the pun) of other sports.

“As with many endurance athletes, the most common injury seen is overuse, with the most common joint affected being the shoulder...”

The physiotherapy challenge faced in the management of an injury is addressing the large schedules of training and competition, and the potential risks of the training environment through rehabilitation, namely unpredictable surf conditions. Due to the semi-professional nature of the sport, there is still a large gap in the knowledge of training overload among many of the coaches, and the sport still relies heavily on the outdated theory of 'more is better' in terms of training load.

Thus, as well as the hands-on treatment, there is a substantial amount of time dedicated to educating the athlete and their coach as to what is right and wrong in terms of rehabilitation, and we work very closely with the exercise science department of James Cook University in Townsville to improve this.

A typical shoulder injury presentation in surf athletes is when the pain prevents them from training anymore or is significantly affecting their performance. I believe this is because the athletes are more like four-wheel drives than Porsches, and it is not uncommon for them to have bumps and bruises as a result of impact with craft, cuts and scrapes from bashing around the turning cans of a surf swim race, and strains from being rag-dolled by the waves.

Photo opposite credit: Harvie Allison



Australia
for life



Photo credit: Harvie Allison

Courtney presented with shoulder pain during a heavy period of training; the onset was during a long ski session with repeated sprints through the surf, also known as 'ins and outs'. While negotiating the break she had to brace with her paddle to stop backward movement and to get started again, move her ski forward as well as balance after crashing through a wave. Her arm was at approximately 60 degrees abduction with around 30 degrees external rotation. The irritation did not stop her completing the training session and she continued to train for the rest of that week, in the hard block of training she was in.

On examination, Courtney had a typical arc of pain and positive Hawkins-Kennedy and Neer's Impingement tests. She had overactive subscapularis, supraspinatus and upper trapezius muscles, with hitching and underactive inferior cuff muscles, namely poor infraspinatus control and poor serratus anterior activation. The subacromial irritation resulted from an identified incident and the continued training with pain resulted in a number of compensatory changes, culminating in altered movement patterns. Pain avoidance activities due to a traumatic event was the initial cause of the lack of

muscular control, which then leads to an imbalance where the humeral head moves superiorly with deltoid contraction and in turn narrows the gap for the rotator cuff tendons to pass. This superior translation of the humeral head causes further damage and resulting pain.

“... it is no surprise they float to the top... of other sports.”

Management started in the clinic with standard modalities for the painful symptoms. This included the use of muscle-energy techniques to restore pain-free movement and establish pain-free movement patterns. We used dry needling to reduce the muscular overactivity in the subscapularis, supraspinatus and upper trapezius, and then commenced an abstract resistance program reinforcing correct recruitment patterns. We also utilised posture-setting exercises to improve posterior shoulder awareness, progressing to a paddling ergo machine in the clinic with the focus on technique; progression was limited by the onset of symptoms during or post-exercise. To achieve further feedback, we videoed Courtney on the ergo machine so she could also be aware of her technique faults and what to focus on. This video footage was also given to her coach, so that on her return to training he would be able to identify the change in technique and know what to look for to prevent the condition from worsening. We then moved to still water, again holding back on intensity; once confident in this environment, we introduced the surf and started all over again, with easy conditions progressing through to the most testing surf.

As we progressed to return-to-water training, we installed a Go Pro waterproof camera to Courtney's board and ski. This provided us with valuable information on her technique and her ability to maintain the desired changes while back on the craft in the water. The same approach was adopted with all water disciplines, with both swimming and board paddling also painful at the catch. The introduction of surf sessions increases the demands on stability and balance of the craft and is a critical step of rehabilitation; therefore, we are very particular about where and in what conditions training takes place.

“We do not have the luxury of every movement being technically the same.”

As I said previously, Courtney is as close as we get to a professional athlete, in and out of competition. Therefore, with her professional approach she was able to resolve her symptoms quickly once given the knowledge to do so.

With regular correspondence and feedback to her coach, we used an active rehabilitation approach to minimise her training down time. Unfortunately, this type of injury does not resolve as quickly in the amateur athlete due to the inability to attend daily physiotherapy sessions and one-on-one coaching to address their biomechanical deficiencies.

The emphasis, therefore, in the amateur or younger athlete is on reduction of aggravating factors and, in particular, training. This being said, the treatment remains the same; it's just the ability to maintain a consistent training load that can suffer when an athlete lacks the time and funding to address their treatment professionally.

Troy Eady

APA Musculoskeletal Physiotherapist

Troy Eady is a physiotherapist in private practice with 13 years involvement with surf lifesaving. Since 2000 he has been the physiotherapist for the Surf Life Saving Australian National High Performance Squad, and since 1999 he has been the physiotherapist and emergency services coordinator for the Nutri-Grain Ironman Series. Eady is also a registered nurse.

PLAYSAFE™

MOUTHGUARDS · DIRECT



*The Worlds Most Protective
Mouthguard.....
At Your Convenience*



Playsafe Mouthguards have developed a self-impression system so that now impressions for the construction of custom laminated mouthguards can be made in the comfort of your own home.

Order online 24/7 and be ready to play in 7 days.

www.playsafemouthguards.com.au



A chat with... APA President Melissa Locke

Sport Health chats with Melissa Locke, President of the Australian Physiotherapy Association (APA) on recent successes, future challenges and major achievements within the domain of physiotherapy.

“I don’t want my role as President to be remembered, but instead I’d like this period at the APA to be remembered as a time of innovation and progress.”



What are the current and future challenges for physiotherapy, especially sports physiotherapy?

Sports physiotherapy is a vibrant and healthy industry, but it does face certain challenges as the discipline grows. These challenges include the ease and efficiency of direct referral to sports physicians and radiologists; and

the ongoing task of working with other professions, such as exercise physiologists, to create professional practice models.

How is the APA working to address these issues?

We have been lobbying the Federal Government to support direct referral to medical specialists and imaging referral with commensurate rebate. We have been building ties with other professional groups and associations to create positive relationships across sports and exercise health-care.

We have continued to grow professional development in sports physiotherapy with particular attention to regional areas; we have also refined the Sports Physiotherapy Australia Level Three course, one of the APA’s most popular professional development courses.

We also had a large presence at the London Olympics and Paralympics this year, as only APA Sports Physiotherapists can work with Australian Olympic teams. It was fantastic to see our members helping to keep our elite athletes in top form, providing them with the best chance of success.

How can/should the government assist?

The government needs to support direct medical referral and extended imaging referral with comparable rebate to other professions.

How has your time as APA President been so far?

It has been a wonderful opportunity! I have really enjoyed advocating on behalf of physiotherapists across Australia, engaging with members, and working with such fantastic staff and volunteers. With my two year tenure as President coming

to an end soon, I’m looking forward to welcoming our President elect Marcus Dripps into the role at the end of the year.

What have been your main achievements?

We have had many successes over the past two years; including the 2012–2014 Strategic Plan, which created a clear vision and mission for the APA, and a Governance Review, to guide and manage our engaged members’ (who are office bearers) time better. We appointed two independent non physiotherapy board directors – more than 150 outstanding Australian business people applied – and I am so pleased to have welcomed Louise McCann and Stephen Kelly on board. We have made gains in clinical education and achieved better funding for clinical placements. I also made many trips to Canberra to present at Productivity Commissions and Senate Enquiries, and to speak with politicians and department leaders to show them why physiotherapy is essential in primary health care; extended scope of practice has featured strongly in our advocacy. It’s important to note that the achievements we have made have been a product of the whole Board and Association, and I’m very proud of our work.

What do you still hope to achieve in your term?

I hope to see physiotherapy have a bigger voice in the review of the Aged Care Funding Instrument; to see the APA continue to be very active campaigners for the National Disability Insurance Scheme (NDIS) and become key players as it evolves; and I want to continue to encourage physiotherapists to be involved in Medicare Locals and have a voice in primary health care.

What would you like to be remembered for after your Presidency?

I have always felt that I have been standing on the shoulders of former giants during my Presidency, and ultimately I don’t want my role as President to be remembered, but instead I’d like this period at the APA to be remembered as a time of innovation and progress. I’ve very much enjoyed working with Cris Massis, our new CEO, in developing a clear, strong vision for the future and I’m looking forward to a seamless transition when Marcus Dripps comes on board as President.

Looking to the future, do you see any opportunities for an organisation like SMA, to work together with the APA?

We are always looking for opportunities to work with like-minded organisations to support health and well-being, and to advocate for quality healthcare for all Australians. In July, Cris Massis and I met with SMA President Michael Kenihan and SMA CEO Nello Marino to look at how we can strengthen our ties. Our two organisations have had a strong relationship in the past and we are committed to working more closely together again. There are opportunities in advocacy, professional development and sharing of resources and knowledge.

Discipline group news and events



Australasian College of Sports Physicians (ACSP)

News:

Call for membership

- ACSP is the professional body representing training and assessing Sport and Exercise Medicine (SEM) Physicians in Australia and NZ. Associate Membership is open to all registered medical practitioners with an interest in the field of SEM and applications are now invited. Benefits include: weekly news bulletins, sport and exercise medicine journals, MOPS, professional education activities, collaborative research opportunities, discounted conference registration and opportunity for collegial interaction. Applications for Associate Membership can be obtained at www.acsp.org.au, phoning 03 6224 4449 or emailing acsp@bigpond.com

For more information visit www.acsp.org.au

Australian Psychological Society College of Sport and Exercise Psychologists (CoSEP)

News:

- The CoSEP 2012 AGM was recently held at the active 2012 conference. A range of CoSEP themed presentations were delivered, including the inaugural presentation of the APS College of Sport and Exercise Psychologists Student Awards – established in honour of Professor Tony Morris.
- The prize for Best Student Presentation in Sport and Exercise Psychology for a University of QLD Masters Student was awarded to Brendan Smith at a CoSEP/QAS PD event on August 29, 2012 in Brisbane. Brendan presented on his Masters Thesis research – *Predicting and preventing homesickness in the residential athlete* which focused on residential athletes from the AIS.
- The cover feature for the December issue of the APS InPsych magazine is 'Being the best: The psychological edge in sport and the performing arts' – providing a great profile of the work of sport and exercise psychologists. Keep an eye out for your issue.

For more information visit www.psychology.org.au

Exercise & Sports Science Australia (ESSA)

News:

Remember to Re-Member

- ESSA membership renewal starts at the end of November 2012. Be sure to take full advantage of your member benefits and renew before the end of the year. The ESSA National Board and head office staff work together to enhance the growth and awareness of exercise and sports science in Australia. Our work focuses on industry development, advocacy and recognition for the exercise and sports science members we represent. Your membership fees are used to help your industry grow and develop. To renew, phone 07 3862 4122 or email info@essa.org.au

Upcoming events:

- We have a range of professional development opportunities throughout the year, including roadshows, full and half day workshops, webinars and DVDs. For all listings visit essa.org.au/education/ce-courses
- Start SMART, Grow STRONG, Become a FRONT RUNNER!** The **2013 ESSA Business Forum** will be held on May 18 and 19, 2013 in Wollongong. The program will cover everything from starting out to experienced operators. More information at essa.org.au/business-forum

For more information visit www.essa.org.au

Sports Doctors Australia (SDrA)

News:

- The be active 2012 conference has been a great success in Sydney. SDrA played a major role in providing a high level of content directly relevant to sports medicine clinicians. We will continue our endeavours in this direction.

For more information visit www.sportsdoctors.com.au

Sports Physiotherapy Australia (SPA)

News:

- The year of professional development is drawing to a close – many states will be holding social functions with a guest speaker. A big year of professional development is planned next year, with more regional events to be held.

Upcoming events:

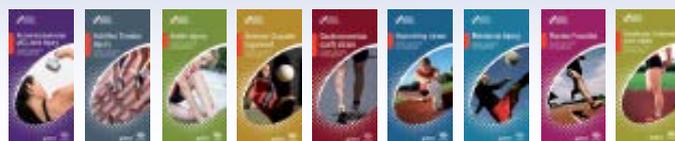
- The Australian Physiotherapy Association biennial conference will be held in Melbourne from October 17–20, 2013.

For more information visit www.physiotherapy.asn.au



SPORTS INJURY FACT SHEETS

Sports Medicine Australia members can now display valuable sports injury prevention and management resources within their practice and even customise them with their own address and contact details.



For more information or for an order form visit <http://sma.org.au>

The Journal of Science and Medicine in Sport

The year in review, the year ahead

The *Journal of Science and Medicine in Sport* (JSAMS) has had a year characterised by great success, expansion, recognition, and most of all bringing relevant research to the membership of Sports Medicine Australia (SMA). The role that JSAMS plays not just in Australia, but also internationally, has become more clearly defined. At a local level, JSAMS is an avenue by which members of SMA can disseminate their research work, or use it as a tool to drive knowledge relevant to their practice. It has relevance across the large domain of sports medicine and sports science disciplines and has shaped itself to include areas of interest to SMA's broad membership. At an international level, JSAMS has become highly respected as a first-option journal for submission of high quality work. This has been evidenced by the large number of submissions that the journal receives from countries across the world. In an increasingly competitive publishing market, JSAMS has been consistently receiving an increased number of submissions each year, has been accessed by a greater number of readers each year, and has been publishing papers from a wider range of countries each year.



The following is a snapshot of the achievements of the journal in the past 12 months:

- Submission of papers from nearly 50 countries.
- Submission of around 600 papers.
- Achieved the highest Impact Factor for the journal to date (3.034).
- Ranked 8th out of 84 journals in the Sports Sciences category on Impact Factor.
- Recorded over 1,000 JSAMS papers being downloaded from Elsevier's Science Direct platform every day from around 100 countries. The highest country users of JSAMS papers are (in order); United Kingdom, Australia, USA, Canada, Spain, Iran, Brazil, Netherlands, New Zealand, and China.
- Expanded the group of Associate Editors.
- Strengthened the journal's clinical focus.
- Expanded the Editorial Board, which now has representation from 11 countries.
- Consistently seen by SMA members as an important part of membership.

As we look ahead to 2013, JSAMS will move into its 16th volume – although it existed for a long time prior under a different name. Our focus will continue to be the publication of papers of relevance to the broad sports medicine and sports science community in terms of research and applied practice areas. We will see greater strength come through in the clinical areas of sports medicine, a greater number of submissions, and an even more global uptake of the journal.

Gregory S. Kolt, PhD

Editor-in-Chief

Journal of Science and Medicine in Sport

Voltaren®

“VOLTAREN HELPS GET ME MOVING AGAIN”

ANDREW GAZE
AUSTRALIAN BASKETBALL LEGEND



Localised joint and muscle pain

Don't let pain put you on the bench. The Voltaren range contains the proven anti-inflammatory ingredient diclofenac, to relieve pain and inflammation associated with back, muscle and joint injuries. There is a Voltaren product suitable for a range of pain levels, to help get you moving again.



For temporary relief of back and muscle pain



For stronger pain relief that works fast* and lasts up to 8 hours



Always read the label. Use only as directed. Consult your healthcare professional if symptoms persist. Voltaren Rapid 12.5 [Incorrect use could be harmful]. Voltaren Rapid 25 [Incorrect use could be harmful, your pharmacist's advice is required]. *When taken at an initial dose of 2 x 25mg tablets, Voltaren Rapid 25 works in as little as 15 minutes.

ASMI 18102-0810



MADE OF ADAPTIVE SUPPORT

THE NEW GEL-KAYANO 18

With adaptive support and cushioning, the GEL-KAYANO 18 distributes impact more effectively. The advanced heel technology will help you achieve a more personal fit, and perhaps even a new personal best.



find us - [facebook.com/ASICSaustralia](https://www.facebook.com/ASICSaustralia)
follow us - twitter.com/ASICSaustralia



LEARN MORE ABOUT THE GEL-KAYANO 18

AT [ASICS.COM.AU](https://www.asics.com.au)