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Another View of the Crawford Report

The Future of Sport in Australia



Much has been written recently about 'The Future of Australian Sport' report known to most as 'The Crawford report' named after its author David Crawford who amongst other things, previously headed the Australian Government's review of soccer in Australia. Released in November 2009 the Crawford Report has resulted in numerous media articles, a number of which highlighting the impassioned and sometimes hostile response to the recommendations, from some National sporting organisations and peak agencies, and in particular those with a heavy stake in Olympic sport.

The media reports have tended to focus predominantly on the apparent threat to Olympic sports funding and the

recommendation to redistribute government funding and support from the peak to the apex. No doubt many of us have come to expect that it would be this sort of controversy that dominates the headlines and as a consequence the perception of the report's content.

However there are a number of less controversial aspects of the report that appear to have drifted under the media radar despite their likely unanimous support from all sport and recreation communities. It's perfectly understandable that mainstream media are less likely to run with items that don't raise controversy, however many would no doubt agree that the issue of volunteers in sport and recreation continues

to be overlooked at a number of levels. As pointed out by Crawford, 'The infrastructure of community sport, made up of both people and facilities, is under threat. The supply of volunteers, often the lifeblood of any club or association is under pressure'.

It is estimated that over 1.5 million volunteers are associated with sport and recreation clubs and associations across the country and as is well known and highlighted in the report, volunteers are becoming more and more scarce due to a number of factors including modern lifestyles, flexible working hours that no longer fit into the schedules for community sport, compliance obligations and increasingly onerous duties of care commitments.

Most SMA members, regardless of their role and position would be very familiar with the importance and value of volunteers in ensuring the continued operation and viability of many sporting clubs, associations. Many organisations like SMA were founded on a sense of volunteerism and have for many years relied heavily on numerous very supportive volunteers to support the activities it delivers at both a community and professional level. Whilst the volunteer aspects of SMA have changed over the years, there continues to be a strong reliance on people who freely give up their time and often potential earnings, to support the activities of the organisation. This is highly valued and cannot be overstated.

Crawford also notes that volunteers face increasing costs for required courses such as coaching, police checks or other out of pocket expenses including telephone calls, travel cost and sporting equipment, in addition to costs of courses and accreditation associated with qualifications such as first aid.

Again this is a very pertinent issue to SMA with over 5000 sports trainers and sports first aiders trained annually by SMA across the country to provide invaluable prevention, treatment and ongoing management of sporting injuries. Tens of thousands of volunteers have been trained to various levels of proficiency by SMA since the early 1990's through the Safer Sport program. Like all volunteers, almost all participants of the program go on to provide honorary service to their clubs and associations as highlighted by the Crawford Report.

Research conducted by the University of Ballarat for SMA in 2001 indicated that many of the volunteers working in the capacity of sports trainers or first aiders are, like many volunteers in community sport, often paying for the privilege of providing injury support services through out of pocket expenses such as fuel, sports tape and other medical supplies.

Aligning this is the continued pressure on sporting organisations to operate as a business with increased accountability which has seen many move off the 'kitchen table' and onto the 'board table'. As noted by Crawford, risk mitigation and management, as in business are becoming much more relevant to sporting, however the cost of training and accreditation usually comes at a cost. Crawford suggests 'The Australian Government should explore a national scheme where volunteers would be reimbursed for mandatory accreditation courses such as coaching and first aid. Volunteers contribute their time and social capital and it is not unreasonable that they be compensated by government for undertaking mandated training'.

SMA invests hundreds of thousands of dollars annually on the delivery, development and support of the Safer Sport Training and accreditation program. Most of the direct cost for these programs is borne by the consumer (who in all almost all cases are club volunteers) and supported by sponsors such as BDF and Asics. However, if it weren't for a great amount of volunteer time and effort the costs of such programs would be much, much higher.

As such SMA is supportive of the Crawford recommendation of reimbursement for training and accreditation of mandatory courses such as coaching and first aid as a means of ensuring continued involvement of many volunteers at all levels of sporting organisations. Whilst this is only a very small part of the report any initiative of this kind has the potential to have an enormous impact to many sport and recreation organisations and provide further recognition to the invaluable done by many of our volunteers.

Further Reinforcement of Our Multidisciplinary Nature

Whilst on the topic of people freely giving their time and as we again come off another hugely successful "Be Active" Conference in Brisbane in October 2009 we are once again provided the opportunity to reflect on the multidisciplinary nature of Sports Medicine Australia and its numerous partnerships in action. With almost 1000 delegates in attendance, Be Active again forged new partnerships and strengthened existing relationships between the numerous different disciplines and professions represented at this wonderful event.

As previous, Be Active combined three successful conferences, the 7th National Physical Activity Conference,



the 6th National Sports Injury Prevention Conference and the Australian Conference of Science and Medicine in Sport, which for many years been the flagship event on the SMA professional development calendar. This in itself is a major achievement of the Conference Committees and the brilliant conference chairs, Professor Wendy Brown, Dr Anita Green, Associate Professor Jill Cook, Associate Professor Leonie Otago and who, with their respective organising committees, managed not only to pull together some truly amazing programs filled with the highest calibre presenters, but to also to satisfy the multidisciplinary objective associated with bringing these three conferences together.

On this note it would be remiss of me to take the opportunity to also highlight the leadership of Gary Moorhead, who many would be aware has left SMA to take up a senior position in

Government. Gary has steered SMA over the past ten years and was instrumental in the initial and continued collaboration of the three conferences which in Brisbane delivered what many regular attendees regard as the best conference they had attended.

Mentioning Gary's departure also provides an opportunity for me to introduce myself to many of the members and SMA friends and partners who receive Sport Health. Having had over 10 years experience as an SMA employee and several more years of involvement with SMA in my previous roles in the sport, fitness and recreation industries, it is a great honour to take up the role of CEO of Sports Medicine Australia. To provide some background my previous roles with SMA include Smartplay Program Manager and later Executive Officer of the Victorian Branch, and more recently as National General Manager working alongside Gary and the National Board. I would like to believe that this provides me with a very sound internship to the role and to SMA and trust that this will place me in good stead. I very much look forward to working with the many great people that are part of SMA.

Research Foundation Announcement

The recently constituted Sports Medicine Australia Research Foundation received a significant injection of support of the ASMF Fellows and the Australian Association of Podiatric Sports Medicine. Both the Fellows and the AAPSMM generously committed \$10 000 each to Foundation at the recent ASMF Fellows AGM held in Brisbane.

The SMA Research Foundation's primary function is to support young researchers and those undertaking advanced training in Sports Medicine and it's disciplines by granting relatively small amounts to those starting out in research. Applications will only be open to SMA members and the recipients must agree to present their research findings at the annual ACSMS conference.

The Foundation is pleased to announce that research applications are now invited for the 2010 funding round. A limited number of grants to the value of up to \$2000 will be available. Submission details are available on the SMA website (sma.org.au) and will be advertised through the SMA Member E-News

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The cost of Medicare's obsession with surgery



One of the aspects I really like about Medicare is that it has a section on its website where anyone can look up the exact tally of each item number paid out in every state every year. I have to occasionally remind myself about the positives of Medicare because, as a sports physician, I have a tendency to obsess about the negatives. It is obviously a positive, for example, that we have a universal basic-level health insurance system in Australia funded by the government. A fundamental reform will hopefully occur at some stage whereby Medicare will record the major diagnosis for patient consultations, but at least you can at least see how many consultations of a certain type get funded by Medicare each year. Unfortunately most surgeon and physician consultations don't get split up into their subspecialties, but at least this comes about from an equality principle where Medicare gives the majority of surgeons and physicians identical consultation item numbers.

Despite being now recognised as specialists by the various medical boards (and allegedly by the Federal Health Minister), sports physicians are still in a Medicare limbo of being neither generalist nor specialist. One consequence is that it is easy to track how many sports physician consultations get performed in Australia every year. The absolute number of consultations each year is slowly growing. The number of sports physicians in Australia is also growing, so it is possible that the number of consultations per sports physician may be static or possibly even falling slightly. The bigger picture is that the number of sports physician consultations in Australia is staggeringly small. There are more arthroscopic surgery *operations*

billed to Medicare each year than there are sports physician *consultations*. The implication is that if you suffer, say, a knee injury or develop knee pain playing sport in Australia that you are more likely to end up having a knee arthroscopy than you are to even get a *consultation* with a sports physician. Since there are some patients who get a surgical consultation without being operated on, a patient would be substantially more likely to get a surgical consultation than a sports physician consultation for a sports injury in Australia. Although this simply reflects that surgeons are a far more established part of the Medicare system, the number of arthroscopies also appears to be growing each year at a much faster rate than sports physician consultations. Despite the emergence of sports and exercise medicine as a specialty, most GPs in Australia would still elect to refer a sports injury to a surgeon for a specialist opinion than a sports physician (although this is certainly forgivable in areas of the country where there are relatively few sports physicians).

I had an opportunity last year to join a new sports medicine centre in Sydney, which had some initial attraction in its location, interior design and quality of surgeons who were practising there. However, the place turned out to be a bad fit for me. I am used to (and prefer the model of) management by a team of practising partners who are mainly sports physicians and physiotherapists. I don't have any problem with surgeons working at a sports medicine centre, but I would prefer to surgeons to revolve around the centre rather than the centre revolving around the surgeons. The consequences of how



sports medicine gets practised will differ depending on what the management views as its core business. With a practice that is run by physiotherapists and sports physicians, the core business will tend to be garden-variety sports injuries. With a practice that is run by surgeons, the core business will be operating on patients and triaging patients for surgery. At this new clinic, I made enquiries of the management about whether they intended to purchase equipment such as a shock wave machine, spirometer, blood spinner, diagnostic ultrasound machine, compartment pressure testing kits and have supplies of hyaluronan injections, all infrastructure that might be part of a holistic (including non-surgical) sports medicine practice. The answer to all of these questions was in the negative, so it was easy for me to decide that I wasn't a good fit for this particular clinic.

Sports physicians have a number of important roles in our health system. These include the non-surgical management of musculoskeletal conditions and medical conditions associated with sport. A further role, which is also very valuable, is to give advice on the value of alternative management options. For example, I think it is potentially very valuable for a patient who has an acute ACL injury to have a sports physician consultation. Some others may disagree on the basis that an acute ACL injury is a 'surgical' condition rather than a 'medical' one. However, a sports physician can give a patient a clear run down on the natural history of an ACL injury if treated conservatively and what surgical management would be trying to achieve. As a non-surgeon, a sports physician

can even present the argument in favour of various surgical techniques for an ACL reconstruction, which might influence the choice of a surgeon which more suits the particular patient. Certainly a good GP with musculoskeletal training or a highly-experienced sports physiotherapist could also perform this role, but I think it is one that sports physicians are particularly well-equipped to deal with.

I prefer to work in sports medicine centres that are orientated towards non-surgical treatment than surgical triage and it is great that this choice is available. It is frustrating that the management of the Medicare system (i.e. Department of Health) seems to see the world from the same viewpoint as the management of this new surgically-orientated sports medicine clinic. That is, Medicare's core business as far as sporting injuries are concerned is also surgery; non-surgical treatment of sports injuries isn't of much concern to the bureaucrats, with much of it unfunded and poor rebates given to the little that is. Sports physicians have lived for many years with the poor Medicare rebates for their consulting, due to the fact that the training program hasn't yet been properly recognised by Medicare. I get sick of having to explain to patients every day about the lack of Medicare (or private health) rebate for the treatment I suggest that they have (MRI scans, shock wave, compartment pressure tests etc.). Specialty recognition for sports physicians is meant to be just around the corner, which is what has been said for the past decade. Ironically just as Nicola Roxon was announcing that sports medicine was officially a specialty with respect to licensing (but not as far as Medicare was concerned) she had just removed the Medicare rebate for injections, one of cornerstones of non-surgical sports medicine management. I haven't stopped offering patients injections where I feel this form of management would be helpful, but on top of a discussion about side effects and risks I'll have to add an explanation about how Medicare (for undisclosed reasons) will no longer give any rebate for the cost of the injection. Which is essentially the same explanation I need to give when I recommend an MRI (...a psychiatrist or obstetrician can order a knee MRI under Medicare, but not a sports physician), use shock wave or explain the low Medicare consultation rebates. Australia has a healthy number of high-quality sports physicians but relatively few who fully embrace the Medicare system. Some of our top sports physicians are now working overseas and others are working hard and earning good money but simply doing few, if any, private practice consulting sessions, because there is good alternate work without the grief of fighting against a system that doesn't seem

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and... glow-sticks!?!?

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to want you in it. It is very rare nowadays to see a sports physician who would do more than six consulting sessions (i.e. a 0.6 load) in a week. Those of us who work with professional teams tend to be lower than this.

Given the small but steady increase of sports physician item numbers I described from the Medicare statistics, it means that some sports physicians must still be doing a reasonable clinical load. Although I can't prove it, I would strongly suspect that it is a certain *type* of sports physician who is keeping up a steady clinical load. Virtually no one is doing more than a 0.6 load of consulting, but I suspect that there are some sports physicians who are doing a 0.3 or 0.4 load of surgical assisting and these sports physicians are probably keeping up their previous levels of consulting. In other words, sports physicians who tend to favour recommending non-surgical treatment for their patients are more likely to get fed up with Medicare and reduce their consulting, whereas those who tend to favour recommending surgical treatment are finding that working in the Medicare system can still be quite lucrative for them. So not only is the system biased towards surgeons over physicians, it is biased towards physicians who recommend surgical treatment over those who recommend non-surgical treatment.

In 2002, a landmark RCT published in the *New England Journal of Medicine* found that knee arthroscopy was no better than placebo surgery when used to treat knee osteoarthritis¹. The authors remarked that 'the billions of dollars spent annually on such surgery might be put to better use'. In the same journal in 2008, very similar findings were replicated in another study². I wrote an editorial at the end of 2002 in the JSAMS stating that it was time that 'health insurance rebates in sports medicine should consider scientific evidence'³. Since the publication of the Moseley article, knee arthroscopy rates in Australia haven't come down (as you would expect for a health system which reacted to the Moseley findings) but have actually risen 25%. Medicare has continued to basically ignore rebates for non-surgical treatment of knee osteoarthritis and pay out in full for surgical treatment of knee osteoarthritis, including knee arthroscopy. Surgical clinics have continued to offer knee arthroscopy to a high number of patients, with few of them doing long-term follow-up research to ascertain whether the surgery was beneficial.

There is an alternate management for knee osteoarthritis (in its mild-moderate forms) that has strong scientific evidence supporting efficacy: hyaluronan gel viscosupplementation injections⁴. Even though this treatment has by far the best results of all medical procedures for mild-moderate knee

osteoarthritis (see Table 1), Medicare actually prohibits doctors from charging a clinic consultation fee for using this type of treatment^{1, 5}. So in 2009, in the face of increasing numbers of ineffective arthroscopy procedures but an effective alternative treatment, what 'reform' is made by the Medicare system? Not a reduction of the rebates or indications for knee arthroscopy in osteoarthritis. Not an introduction of hyaluronan gel injections onto the PBS. Not inclusion of physiotherapy or podiatry treatment in Medicare as alternatives for treating knee osteoarthritis. Not belated specialty recognition for sports physicians to offer non-surgical treatment like hyaluronan gel injections. Medicare has decided to *remove altogether* the rebate for injections into the knee joint. In case you didn't get the message that the Medicare system doesn't want to pay for the cheaper effective treatment and only wants to pay for the more expensive harmful treatment, this change absolutely rams it home. No explanation has been given, but it could almost be inferred that they don't want doctors to treat knee osteoarthritis according to scientific evidence.

Table 1 outlines a comparison between three different types of treatment for mild-moderate knee osteoarthritis: (1) viscosupplementation with hyaluronan gel injections performed by a sports physician (2) corticosteroid injection performed by either a rheumatologist or guided by a radiologist (3) arthroscopic chondroplasty performed by an orthopaedic surgeon or registrar. I apologise for offending any rheumatologists who are big on using viscosupplementation. My impression is that most of them favour corticosteroids, which seems to be backed up by their website (www.arthritisaustralia.com.au – which mentions corticosteroids as a treatment and has relevant information, but which fails to mention viscosupplementation as an option). I include the 'registrar' option for surgery, as the MBS is kind enough to the orthopaedic surgeons to include a clause² which states that a surgeon can bill even if a salaried registrar does the operation, provided it is under the 'direct supervision' of the surgeon.

1 G.13.1. Services which do not attract Medicare benefits

Non Medicare Services: An item in the range 1 to 10943 does not apply to the service described in that item if the service is provided at the same time as, or in connection with, any of the services specified below:...Intro-articular (sic) viscosupplementation, for the treatment of osteoarthritis of the knee;

2 T.8.2. Group T8 (operation) services may be provided by a specialist trainee

(1) An item in Group T8 applies to a medical service provided by:

- (a) a medical practitioner; or
- (b) a specialist surgical trainee under the direct supervision of a surgeon.

(2) For paragraph (1) (b), a medical service provided by a specialist trainee is taken to have been provided by the supervising medical practitioner.

Table 1 – Comparison of medical (injection) management versus surgical (arthroscopic chondroplasty) for mild-moderate osteoarthritis of the knee

	Medical management (hyaluronan injections) with a sports physician	Medical management (cortisone injections) with a rheumatologist or radiologist	Surgical management (arthroscopic chondroplasty)
Evidence to support (efficacy)	Cochrane review of 76 trials in 2006 'support the use of the hyaluronan class of products in the treatment of knee OA' [4]	Useful for short term pain relief but inferior to hyaluronan after 5 weeks or longer periods thereafter. [6, 7]	Only 2 RCTs, both in which the non-surgical options (not including hyaluronan) did better than surgery [1, 2, 8]
Risk of infection	Very low (+)	Low (++)	Low (++)
Risk of allergic reaction	Very low (+)	Very low (+)	Almost zero
Risk of DVT/PE	Almost zero	Almost zero	Very low (+)
Risk of haematoma	Almost zero	Almost zero	Low (++)
Risk of systemic side effect	Almost zero	Very low (+)	Very low (+)
Risk of osteonecrosis	Almost zero	Very low (+) [9]	Almost zero
Risk of worsening patient's condition	Very low (+)	Moderate (++++)	Moderate (++++)
Cost of treatment	Moderate (1–5 consultations/ injections + \$500 for drug)	Fairly low (1 or more consultation plus injection + \$25 for drug)	High (consultation plus operation fee)
Medicare rebate for consultations	None – it is specifically forbidden to claim a Medicare consultation to perform a hyaluronan injection for knee OA.	Yes – consultant physician consultation (rheumatologist, \$121.30) or guided joint injection (radiologist, \$129.95)	Yes – surgeon consult fee (\$68.75)
Medicare rebate for surgery or PBS rebate for drugs	No – hyaluronan injections are not available on the PBS	Yes – cortisone injections are funded on the PBS	Yes – up to \$521.40 Medicare rebate for surgery
Available in public hospitals?	No – neither sports physicians nor hyaluronan injections are provided at public hospitals	Yes (at outpatients)	Yes (on waiting list). Medicare will even pay an orthopaedic surgeon if the surgeon's salaried registrar actually performs the operation!

I apparently upset a few surgeons with my Dr J column in the winter edition which asserted that we should follow the Scandinavian lead and get an ACL register¹⁰. The part which offended some surgeons was my viewpoint, which I did back up by citing recent literature, that some ACL reconstruction techniques are better than others. Some of the more enlightened surgeons wrote private notes to me, taking issue with some of my minor arguments but essentially agreeing with the premise that far more would be gained than lost by the development of a register.

Well for the surgeons who haven't yet choked fully on their cornflakes reading Dr. J. articles, I am going to up the ante in this issue. I assert that one of the reasons why Medicare apparently can't 'afford' to pay for non-surgical treatment of sports injuries is that a massive blind eye is turned in this country to a small number of surgeons who are systematically rorting the Medicare system in multiple ways. I certainly won't accuse the majority of surgeons in Australia of behaving this way, but I will say that I believe that the practice is widespread. To date, it seems that only one surgeon – Thomas Kossmann of The Alfred in Melbourne – has been publicly named by any investigation into surgical rorting. His main defence publicly given was 'I am only doing what I have seen my other colleagues do'. Despite this public uttering, peak surgical bodies have hardly been rushing to write media releases to correct his implication that surgeons in Australia regularly rort the system. It is high time for Medicare to review its position as to what is appropriate. Surely some of the practices referred to the Kossmann report, including charging multiple item numbers for single procedures and 'supervising a registrar from a remote location', should be completely made completely illegal under Medicare. At the moment, state-run public hospitals are actively promoting to patients with private health insurance to claim on their insurance for operations done by the surgical registrar, so that the hospital can re-apportion money from the Federally-funded Medicare and private health systems. The consultant surgeon may have been nowhere in sight during the operation but gets a fat cheque in the mail as a side effect of this ridiculous system of state-federal cost-shifting.

Failing to provide after-care is another practice that I have commonly heard about occurring but never heard about in terms of sanctions or disciplinary action. Many patients may prefer to get post-operative care from their GP, physiotherapist or sports physician because they might actually like to be seen for longer than 45 seconds, yet there never seems to be any concern for the fact that essentially this means that a surgeon

has charged for after-care and not provided it. All of these aforementioned flagrant breaches are tolerated by our system even before you get to the issue of item numbers being offered for surgery that is not beneficial or even harmful to the patient. The MBS with respect to surgery stands in major contrast to the PBS. The government will only subsidise a drug if it is for an indication that has some scientific evidence behind it, yet the government will subsidise an operation despite scientific evidence that it is harmful.

A few months ago, some urologists with a marketing bent were quoted in the SMH/Age in a story about a guy in his 40s with prostate cancer, suggesting that men should start getting their PSA tested at the age of 40. Of course, Medicare fully funds this, consistent with rolling out the red carpet for surgeons whilst ignoring scientific evidence at the same time. Simon Chapman from the University of Sydney School of Public Health responded and asked the question 'What health-care services are going to be cut to cover the additional costs [of ineffectively screening younger men's prostates]?'¹¹ The management of sports injuries in Australia is a great case in point to demonstrate what doesn't get funded if you spend an inappropriate amount of money funding surgery. We have a system which rolls out the red carpet to surgeons and, to give some balance, this does allow an environment where we have many world-class sports surgeons in Australia. But in supporting the 'cancer' that is bad quality/unnecessary surgery and, apparently, widespread tolerance for surgeons charging inappropriate item numbers there is apparently no money left for essential reforms like a national sports injury surveillance system or adequate funding for non-surgical treatment like specialist sports physicians and physiotherapists^{3, 12-15}.

The biggest question to ponder is how long non-surgeons should meekly sit around and put up with such an inefficient (and bordering on corrupt) system. I was in the second year of my sports physician training in 1993, working at the AIS, when I cheered the announcement that Sydney had won the right to host the 2000 Olympics. Most of the sports physician fraternity thought that the Sydney Olympics would surely see the training program that I was doing in 1993 get recognised by the government seven years later. Many of us worked for free at the Sydney Olympics because we wanted to help and also believed that it would help our profession more to 'do a good job' than to complain about being undervalued by our Medicare system. Of the many legacies that the Olympics hasn't been able to deliver, recognition of sports medicine as a speciality under Medicare is one of the them. Adequate

levels of exercise in the population is another – since the establishment of the AIS, levels of obesity in the Australian population has doubled¹⁶.

The recent announcement that sports medicine was to become a specialty according to the registration process but not (yet) under Medicare, was the latest indication of how much the indulgence of surgeons costs our health system. There (apparently) isn't enough money in the health budget (yet again) to support specialty recognition of sports physicians under Medicare, or PBS funding of hyaluronan injections, or injection treatment for osteoarthritis. But there is still enough money to pay surgeons rebates for operations that they don't do and for surgical procedures that have been discredited in the medical literature as either harmful or ineffective. And if you believe in conspiracy theories, the surgical arm of the AMA, which seems to dominate that organisation, has been remarkably effective at lobbying the government to shut out non-surgical competition for musculoskeletal services. As far as I am aware, the AMA still hasn't recognised sports medicine as a specialty and couldn't be doing more to actively discourage sports physicians from becoming members of their organisation. They would seem to be a party to shutting sports physicians and the non-surgical procedures out of the MBS, in favour of clauses which allow surgeons to bill for procedures that they don't do or which don't work. Nicola Roxon – who pulled the pin on the injection item numbers and thus far has refused to recognise sports physicians as specialists under Medicare – signalled that perhaps she might be willing to take on the surgeons to an extent by substantially reducing the Medicare rebate for cataract surgery. When the Fred Hollows foundation has ads all over the country stating that a cataract procedure can be done for as little as \$25, it is easy to understand why she might have felt that the cataract rebate was a little generous. More to the point though, cataract surgery is one of the best operations in Medicare. Why pick a target of saving money on a type of procedure that unequivocally works? Does the backlash from cataract surgeons and their patients mean that the soft pedal will come back when considering operations that don't work?

So in 2010, when Australia is one of the favourites to be awarded either the 2018 or 2022 Football World Cup, are sports physicians meant to celebrate and support the bid like we did with the Olympics? Or should we use it as an opportunity to try to get media exposure about how badly our Medicare system has failed to tick the box of having a quality public system for looking after sports injuries in this country? Why shouldn't the World Cup money be spent on a national



sporting injuries insurance scheme? Or even a watchdog that will crack down on surgical torts and free up funding for other parts of the system? In the UK, sports physicians managed to achieve full specialty recognition in 2006 as part of the lobbying process for the London 2012 Olympics. Specialty recognition was achieved in NZ in 1997 as their system for treating sports injuries is far more sophisticated than ours. Given that NZ appreciates that more money is spent on sports injuries than road trauma, they have wanted to utilise the expertise of sports physicians and physiotherapists to a much greater degree than Australia has¹⁴. After failing to use the Sydney Olympics to reform a system for treating sports injuries in this country, do we deserve to get a World Cup? Or should we be getting our house in order first? Bringing the treatment of sports injuries into the public system and starting to fund it based on scientific evidence rather than hierarchy of practitioner should be major priorities, and they are every bit as important as building new stadiums.

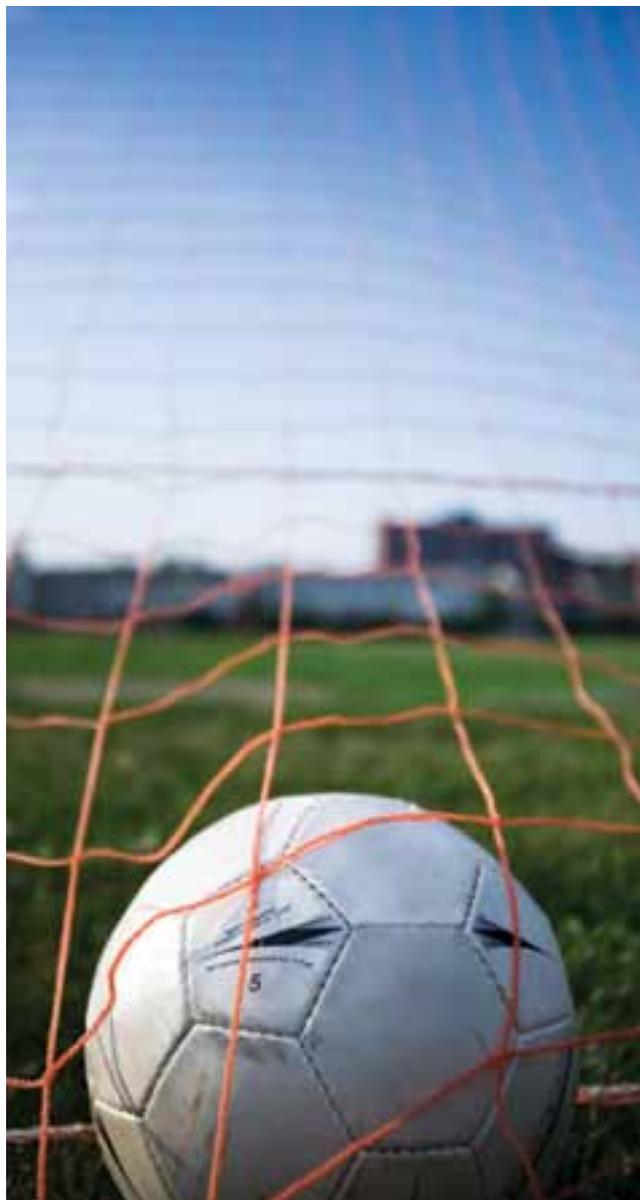
Dr J

Disclosure

John Orchard has accepted travel allowances to speak on behalf of Surgical Synergies, the makers of Osteoartz (a brand of hyaluronan injections). He has also accepted Medicare fees for assisting at knee surgeries.

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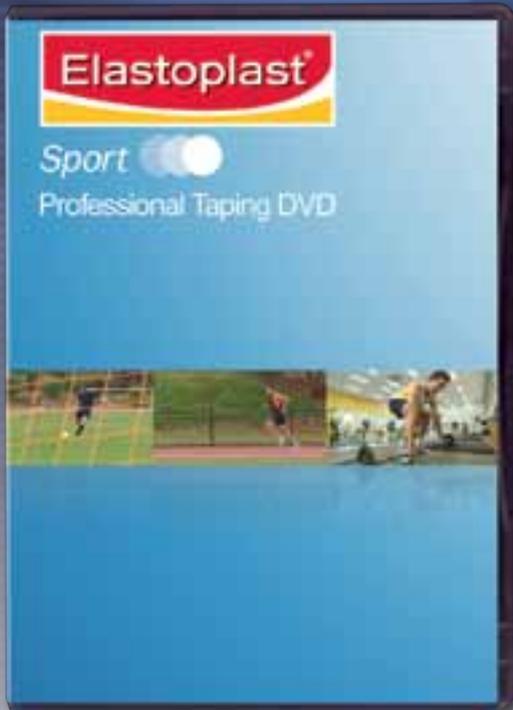
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“be active ‘09” Conference Highlights

The 2009 National Conference was once again built on the model established in 2005 in Melbourne, continued in 2007 in Adelaide and now 2009 in Brisbane. Under the banner “*be active ‘09*”, the Conference was a collaboration that saw the concurrent running of the Australian Conference of Science and Medicine in Sport, the Seventh National Physical Activity Conference, the Sixth National Sports Injury Prevention Conference and the SMA QLD Sports Trainers Conference.

To foster multidisciplinary information exchange and maximise networking opportunities, all sessions and all social events were open to all delegates attending on the day. A total of 975 attended the Conference, with 339 from Queensland, 534 from other states in Australia and 102 overseas delegates. There was also a 70 booth trade exhibition. Details of Conference research award winners are listed below.

SMA owes a debt of thanks to the organising committees of each of the separate conferences and especially to the Conference Chairs, Professor Wendy Brown (Co-ordinating chair), Dr Anita Green and Associate Professor Jill Cook (ACSMS), Professor Adrian Bauman (Physical Activity) and Associate Professor Leonie Otago (Injury). Abstracts will be published as an electronic supplement to the Journal of Science and Medicine in Sport (JSAMS).

In 2010, the National Conference will be held in Port Douglas (4–6 November) as one of the SMA series of ‘boutique’ Conferences. Speakers confirmed include Professor Lars Engebretsen and Refshauge Lecturer Professor Peter Fricker.

Details of the Conference research award winners are listed here.

Congratulations to the following

2009 Australian Sports Medicine Federation Award winners:



Asics Medal winner Associate Professor Philip Morgan and Mr Mark Doherty from Asics

Asics Medal – Best Paper Overall (\$5000 prize including Best Paper award)

Associate Professor Philip Morgan, University of Newcastle
Intervention description and preliminary findings of the ‘Healthy Dads, Healthy Kids’ pilot randomised controlled trial
Co-authors – D. Lubans, C. Collins, J. Bray, T. Burrows, R. Fletcher, T. Okely, J. Warren & R. Callister

Asics Best Paper – Clinically Relevant Conditions (\$2000)

Dr Satyamurthy Anuradha, Cancer Prevention Research Centre, School of Population Health, University of Queensland
Association of physical activity and television viewing time with retinal vascular calibre: The Australian Diabetes, Obesity and Lifestyle Study
Co-authors – G. Healy, T. Wong, D. Dunstan & N. Owen

Asics Best Paper – Performance Enhancement and Basic Science (\$2000)

Associate Professor Robin Daly, Department of Medicine, University of Melbourne, Western Hospital
Changes in bone structure, strength and bone mass

distribution following an 18 month targeted bone loading program in older men

Co-authors – S. Kukuljan, C. Nowson & K. Sanders

Asics Best Paper – Health Promotion (\$2000)

Associate Professor Philip Morgan, University of Newcastle

Intervention description and preliminary findings of the

'Healthy Dads, Healthy Kids' pilot randomised controlled trial

Co-authors – D. Lubans, C. Collins, J. Bray, T. Burrows,

R. Fletcher, T. Okely, J. Warren & R. Callister

Asics Best Paper – Injury Prevention (\$2000)

Ms Lauren Petrass, University of Ballarat

'Kids @ Beach' – caregiver supervision of children

Co-authors – C. Finch & J. Blitvich

Asics Best Paper – Lower Limb (\$2000)

Dr Natalie Collins, University of Queensland

Long duration and greater baseline severity predict poor

short and long term outcome in anterior knee pain

Co Authors – K. Crossley & B. Vicenzino

Ken Maguire Award for Best New Investigator – Clinically Relevant Conditions (Presentation package at ACSM)

Ms Carolyn Taylor, La Trobe University & Deakin University

Groin pain and hip range of motion is different in Indigenous

compared to non-Indigenous young Australian football players

Co-authors – J. Cook, T. Pizzari, N. Ames, T. Wood,

B. Gabbe, M. Makdissi, E. Scase, J. McNeil & J. Orchard

Asics Award for Best New Investigator – Lower Limb

(Presentation package at ACSM)

Ms Clare Ardern, Musculoskeletal Research Centre

Hamstring strength recovery is similar regardless of which

hamstring tendons are harvested for ACL reconstruction

Co-authors – K. Webster, N. Taylor & J. Feller

John Sutton Award for Best New Investigator – Performance Enhancement and Basic Science (\$2000)

Ms Erin Howden, University of Queensland

Paradoxical blunting of the central pulse pressure response

to exercise in patients with chronic kidney disease

Co Authors – D. Holland, J. Coombes & J. Sharman

NSW Sporting Injuries Committee Award for Best New Investigator – Injury Prevention (\$2000)

Ms Emma Siesmaa, University of Ballarat

The role of sport injury and injury risk perceptions on children's continued participation in organised sport

Co-authors – C. Finch, J. Blitvich & A. Telford

State of Queensland Award for Best New Investigator – Health Promotion (\$2000)

Ms Brianna Fjeldsoe, Cancer Prevention Research Centre, School of Population Health, University of Queensland

Mediators of physical activity behaviour change in

MobileMums: An intervention delivered via mobile telephone

SMS for postnatal women

Co-authors – Y. Miller & A. Marshall

Centre of Clinical Research Excellence in Spinal Pain, Injury and Health Award for Best New Investigator – Healthy Spine (\$2000)

Mr Andrew Claus, Centre of Clinical Research Excellence

in Spinal Pain, Injury and Health & School of Health and

Rehabilitation Sciences, University of Queensland

Rethinking how we sit – what is typical, 'good' or 'bad' for the spine

Co-authors – J. Hides, L. Moseley & P. Hodges

Wendy Ey, Women in Sport Award (\$500)

Dr David Greene, Australian Catholic University

Musculoskeletal profile of elite adolescent female athletes in

weight-loaded and weight-supported sports

Co-authors – G. Naughton, E. Bradshaw & M. Moresi

Asics Best Poster – Clinically Relevant Conditions (\$500)

Ms Kathryn Mills, University of Queensland and Australian Institute of Australia

Clinically relevant and stable tools to measure footwear comfort

Co-authors – P. Blanch, A. Chapman & B. Vicenzino

Journal of Science and Medicine in Sport Best Poster – Health Promotion (\$500)

Professor Tim Olds, University of South Australia

Screen time is more strongly associated than physical activity

with weight status in Australian adolescents

Co-author – C. Maher

Asics Best Poster – Performance Enhancement and Basic Science (\$500)

Dr Andrew Shim, Dakota State University

Comparison of stability scores on college aged students using

commercial balance programs

Co-authors – D. Crider, L. McDaniel & S. Bae



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Sport and Exercise Medicine – A new medical specialty in Australia



The Australasian College of Sports Physicians (ACSP) has finally achieved a long standing major objective. The Hon Nicola Roxon MP, Minister for Health and Ageing, has announced that ACSP has been successful in achieving recognition of Sport and Exercise Medicine (SEM) as a new medical specialty in Australia. On November 13, 2009, in response to the Minister's advice, Sport and Exercise Medicine was listed by the Australian Medical Council (AMC) on the AMC List of Australian Recognised Medical Specialties. This is the first new medical specialty to be recognised in Australia since the listing of Emergency Medicine 25 years ago. Whilst 'Sports Physician' has been the traditional and well accepted title of Fellows of the ACSP, increasingly Sport and Exercise Physician, or Sport and Exercise Medicine Physician will come to be used.

These events are cause for celebration, not only by the membership of ACSP and its direct supporters, but by the wider sports medicine community. At last, SEM has moved beyond something seen as a hobby, or a service provided only to competitive sport, to a real status within medicine. This status now means the field has the potential for equal recognition with other disciplines – exercise can now be seen in its proper place as a legitimate therapeutic tool. It will no

longer be something which, sadly and all too often, has been characterized as best avoided in interaction with the medical profession. SEM physicians are committed to excellence in the practice of medicine as it applies to all aspects of physical activity. Safe and effective sporting performance at all levels is a major focus, along with education and research.

Incorporating physical activity as a therapeutic tool in conjunction with more traditional medical approaches has become increasingly recognized and supported by high quality evidence. Exercise has been shown to be effective in the prevention and treatment of common, and often serious, medical conditions, such as arthritis, heart disease, diabetes and many cancers. Exercise does not replace traditional measures such as surgery, medication and sometimes judicious rest in many of these conditions, but it can improve recovery and greatly improve long term outcomes.

The efforts of all SMA members in areas such as rehabilitation, injury prevention and physical activity education take on a new importance with this step forward. To get a better understanding of the potential that exists requires a review of how specialist recognition came to be achieved, and its direct implications.

With the goal of improving the health outcomes of their patients' health with exercise, the ACSP was founded by a dedicated group of like-minded practitioners in 1985. Formal assessment and training structures followed between 1990 and 1993 and it was soon recognised that to give the discipline the attention it deserved, SEM needed to be developed as a fully fledged medical specialty. Many barriers were encountered, and some said that this could never be achieved. Requirements for specialization were set out, and ACSP sought to meet them. The guidelines changed, and at one point the entire specialization process was removed. Suitors in established specialist areas were sought, but flirtations were brief. There were periods of hope, anticipation, and enforced stagnation, but never despair.

It became a tradition for ACSP Presidents to announce to the membership that real progress had been made, and that the specialist horizon was 'about eighteen months away.' The months stretched into years. The enlightened New Zealanders, as part of the ACSP training program, gained specialist status in 1999 – surely a positive sign for Australians? Finally in 2007, Part 1 of the AMC requirements, demonstration of an identifiable body of knowledge to support a new medical discipline, was achieved. The task was then to demonstrate that ACSP training was of specialist standard, so that graduates of the program, ACSP Fellows, could be regarded as specialists. The ACSP training program is unique in the world in offering four years of direct patient care experience in multidisciplinary environments. The program has unquestionably been strengthened by the rigorous assessment and review process that the AMC has imposed. AMC approval of this Part 2 requirement was notified in February 2009. Seemingly the final barrier was Ministerial recognition, at last now achieved. However, having crossed all of the hurdles, the race is not yet won.

Specialist recognition does not automatically lead to the inclusion of SEM in Schedule 4 of the Health Insurance Regulations 1975, upon which Medicare access depends. In order for patients to receive specialist level rebates for consultations, funding is required. This will have to be considered as part of the package of health measures in the 2010-11 Federal Budget, to be brought down in May 2010. Currently ACSP is discussing possible funding outcomes with the health bureaucracy, with the understanding that any proposals are then at the mercy of Finance and Treasury. Parliamentary passage of the Budget proposals and expenditure must be followed by Executive Council approval of the Schedule 4 listing. Final details are then back in the hands

of the bureaucracy, with a likely end result in the November 2010 Medicare Schedule. If nothing else, this has given us a far better understanding of the machinery of government!

Until November 2010 at the earliest, there will be no change to current practice arrangements for SEM Physicians. The status quo applies.

New medical specialties are increasingly multidisciplinary and patient focussed rather than the traditional hierarchical and organ based specialties. The growth of comprehensive approaches to problems using input from a variety of sources can be harnessed for research and public health policy development as well as improving clinical management. The specialisation journey has allowed ACSP to forge strong ties with other disciplines beyond mainstream medicine, such as sports physiotherapy, sports nutrition and exercise science.

Relationships with our professional colleagues are an important factor in the specialization process. Many Sports Physicians currently work in multidisciplinary group practices, most often called Sports Medicine Centres. Historically these centres arose as a result of mutual recognition of the skills of what were then general practitioners with an interest in sport, orthopaedic surgeons, sports scientists and physiotherapists. These different professions were drawn together, and came to appreciate the benefits of alliance via the Australian Sports Medicine Federation (ASMF), founded in 1963, which later became Sports Medicine Australia. Gradually, ASMF, then SMA, and consequently sports medicine centres, have continued to expand to encompass many other medical and allied health professions with an interest in sport and exercise. It is this healthy interplay of skills and exchange of ideas that has helped our athletes, and the broad discipline of sports medicine in Australia, to be among the best in the world.

The Australian Physiotherapy Association has suggested that multidisciplinary practices will be at risk of closure if physiotherapists are unable to refer directly to SEM Physicians. The APA believes that physiotherapists are well equipped to make medical referrals, and patients should receive the same Medicare rebate as apply to medical referrals. Their stated stance is that similar arrangements should apply with referrals to orthopaedic surgeons and neurosurgeons. The APA has proposed that this will improve patient access to necessary services, reduce red tape and be cost effective. There is a precedent with Optometrists being granted direct referral rights to Ophthalmologists for specific eye disorders.

On the other hand, the Australian medical system has long been based on the general practitioner as the primary, and



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pivotal, health care provider, with the most comprehensive knowledge of all of the medical conditions that may affect an individual. Consequently, all referrals should be made by the patient's GP. There are many salutary tales of medical errors resulting from narrow specialist assessments, or failures of communication, where a single generalist would have been alert to the problem. This perspective has been strongly affirmed by the Australian Medical Association in its discussions with the APA. Unfortunately, in many parts of Australia, GP access is very restricted. This delays care, and often limits the ability of GPs to develop their own skills, as they can be drowned in regulatory paperwork. Further, the increasing mobility of our population means that many people do not have a single comprehensive medical record.

The Department of Health and Ageing is well aware of the various benefits and shortcomings of these circumstances, and is seeking to improve medical records, health care access, and to control costs, by what they have called 'broader health system reform.' There has been much speculation in the medical press as to what these reforms might be. In discussions between health bureaucrats and ACSP no clues have been revealed.

If we assume that the existing specialist referral model prevails, will this lead to the death of high quality multidisciplinary care of the physically active? I believe not, and there are certainly arguments to say it can be enhanced. The present government set up the National Preventative Health Taskforce (NPHT) to improve levels of physical activity, and reduce sedentary behaviour with all its attendant consequences of obesity and metabolic disorders that Sport Health readers know so well.

The NPHT roadmap lays out the objective that if more people were physically active for 30 minutes a day, the Australian health care system could save \$1.5 billion annually.

The NPHT recommends 'ensuring all individuals have easy access to health services that provide physical activity, weight loss and healthy nutrition advice and support'. In order to achieve this, the NPHT talks of 'multidisciplinary patient care teams' comprised of health professionals including a physician, dietician, exercise expert, nurse and behavioural therapist/psychologist. This model of multidisciplinary care mirrors that used in professional sport and existing sports medicine centres. This model could, and should, be applied to the treatment of physical inactivity in the community. This is not to argue that there is no place for individuals or small group practices.

If such a model is supported by Government, there will be ready recognition of its merits in general practice. In many cases there will be increased referrals directly to allied health groups, while the more complex problems will require the involvement of the SEM Physician and possibly other medical specialists. At present Australia has 120 SEM Physicians. Unless there is a major commitment from government to assist and increase training, this number will only increase slowly. A major role of the ACSP is to provide education to its own trainees and to the medical and allied professions. Thus far, this role has to a large degree been concentrated on internal training to satisfy the requirements of the AMC. Formal specialist recognition means ACSP can now actively increase its education role.

Given the existing referral models, GPs must be the primary target of education, and a key message will be the health benefits and cost savings achieved by good diagnosis, and comprehensive treatment plans. SEM Physicians are uniquely well placed to assist their GP colleagues in increasing their understanding of, for example, the comparative and contrasting benefits and services that physiotherapists, osteopaths and exercise physiologists can offer.

Early intervention, exercise focussed treatment regimes have proved successful in cost sensitive environments such as injury compensation and the military. The benefits of good communication between professional disciplines cannot be overstated. The goals should be better referrals, better care and better health outcomes. More active Australians should lead not only to reduced health costs but better sporting results. Perhaps not by coincidence, the Independent Sport Panel Report (the 'Crawford Report') sets out similar objectives.

Chronic knee pain represents a major cost and cause of long term disability. The equation of bad knee = can't exercise = weight gain = metabolic disease is too prevalent, and too often thought inevitable, and only managed by activity avoidance. A well known column in Sport Health, and a recent editorial, have made reference to the practice of Orthopaedic Surgery, and in particular the place of knee arthroscopies in the management of degenerative joint disease. Some surgical procedures do not work as well as hoped, and may be labelled unnecessary, or be the target of ready criticism. Evidence is beginning to show that some procedures are inappropriate, and orthopaedic management is changing. I doubt that those performing the surgery can be happy with either the poor results or the criticism. Orthopaedic surgeons were among the founding members of the Australian Sports Medicine Federation, and have contributed enormously to the development of sports medicine in terms of research and teaching. To not maintain this involvement long into the future would be a retrograde step for all involved with management of degenerative joints.

There have been suggestions that SEM Physicians may act in a regulatory or auditing capacity for arthroscopic procedures. Each profession will tend to use the tools it knows best, be that the arthroscope, the injection, the diagnostic image, or the exercise program. We should never forget the importance of the hands and the ability to explain, instruct and motivate in patient care. No single group holds the moral high ground, but we all have the ability to question and explore existing practices, if we feel there may be either some advantage or deficiency. Similarly, no single group can offer all the analytical skills – strength, stability, biomechanics, quality of life measures and the like to make a final decision on what works best. There is increasing evidence for the benefits of resistance exercise, and for injections in the management of degenerative disease of the knee, but there is also no doubt that arthroscopic procedures, in the context of a broader program, can play an important part.

Once more, communication, appropriate referral in each direction, research and education are the keys to good outcomes. It is this collaborative approach that has made all SMA members proud of what has been achieved in sports medicine in Australia. Specialist status for SEM Physicians should be seen as an individual award that reflects the endeavours of the entire team.

Finally, we have the curious situation where SMA has two affiliated medical discipline groups, ACSP, and Sports Doctors Australia (SDrA). SDrA grew out of an alumni association of doctors who had completed postgraduate study in sports medicine at the University of New South Wales (UNSW). Sadly, UNSW has seen fit for its own reasons to terminate the sports medicine program, which had been run in recent years by ACSP Fellows. Some who had completed the UNSW course went on to pursue ACSP training, while many have maintained a strong interest and involvement in the context of their own general practices. SDrA has filled a need for non specialist sports medicine, particularly in many regional areas not serviced by SEM Physicians, and its members will continue to do this to a high standard. SDrA have developed strong links with the Royal Australian College of General Practitioners (RACGP). There is a continuing need and demand for postgraduate education in SEM, and ACSP hopes to continue to offer this. I have had discussions with SDrA President Dr. Shane Brun. We share a commitment to exploring opportunities to grow the relationship between ACSP & SDrA in a cooperative and collegiate manner. ACSP's necessary preoccupation with specialist recognition has kept the cause of unity in the background, but I look forward to a single stronger organization. To this end, ACSP will continue its practice of offering associate membership to all medical practitioners with an interest in sport and exercise medicine.

As an organization, ACSP is pleased and proud that this goal has been achieved. As I have set out, there are uncertainties, and no doubt new challenges which will become clearer through the course of 2010. There is much to look forward to for all involved.

Andrew Garnham
acsp@bigpond.com



REPAIR, RECOVER & REFUEL.

The Melbourne Vixens netball team represent their home city in the elite Australia and NZ Championship competition. The Melbourne Vixens includes Australia's best female athletes and a new generation of netball stars, with seven Australian squad members in the team, including recent World Champions Julie Prendergast, Bianca Chatfield and two-time Commonwealth Games gold medallist Sharelle McMahon.

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

Q. What is your favourite food?

I'm a little partial to chocolate but my favourite meal is chicken and vegetable risotto.

Q. Cereal or toast for breakfast?

Definitely a cereal girl, eating muesli, yogurt and milk helps me to keep going through the morning.

Q. Sharelle, you are working with Netball Victoria as well as playing and training with the Vixens - how do you fit it all in?

I'm very busy. I manage it with a very up to date diary!

Q. So how do you manage healthy meals on the run?

I need to be organised and pack food each morning. It makes drinks like Sustagen important as I can have them in the car on the way to or after training.

Q. What flavour Sustagen is your favourite?

That's easy, Chocolate - I told you I am a chocolate girl!

Q. How do you feel Sustagen helps your recovery?

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

Q. So what now for Sharelle McMahon?

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



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‘Bowling Prehab’: an innovative approach to injury prevention and rehabilitation for fast bowlers



Photo: John Orchard

Sports physiotherapist Kym Hartwich takes a look at a concept developed to address injury risk factors for cricket fast bowlers that can be applied to other sports as well.

Sports physios are regularly called upon to design and implement programs aimed at preventing injury and expediting rehabilitation towards return to sport. We prescribe and progress these programs towards functionally appropriate, even ‘sports-specific’ goals. The big question, however, is whether the outcomes of our interventions carry over into the sporting arena and translate into reduced injury and re-injury risk.

The game of cricket is often touted as Australia’s ‘favourite sport’. Cricket’s large number of participants are just as likely to be seen playing in the backyard as on a perfectly prepared pitch. Yet playing cricket, like most sports, poses some risk of injury.

Studies investigating injury rates among both junior and senior cricketers have demonstrated that fast bowlers carry a far greater risk of injury than other players. Particularly concerning is the prevalence of lumbar spine injuries highlighted in some studies. Lumbar spine injuries are proven to be costly in terms of a player’s ‘downtime’ from playing/training and long-term consequences.

Australia’s fast bowling coach, Troy Cooley, responded to the high injury rate by seeking a way to best utilise a bowler’s time between injury and return to full bowling load. In conjunction with physios, Troy designed a set of drills now known as ‘Bowling Prehab’ within Cricket Australia’s High Performance Program. Not only have these drills developed to become an important part of the player’s rehabilitation to bowling, but also their regular training programs, which encompasses the technical, physical and workload aspects of preparation.

In this way, Bowling Prehab addresses the three main risk factors for injury to fast bowlers: poor technique, poor physical preparation and bowling workload.

When I first stumbled across the concept of Bowling Prehab at Cricket Australia’s Centre for Excellence, my eyes lit up! I wondered if bridging the gap between the physio room and the playing field might be possible. I was keen to get involved and find out more.

What is Bowling Prehab?

Troy’s aim was to design a range of drills to develop strength and coordination in various positions of the bowling technique, and to maximise outcomes of training sessions while minimising total bowling workload.

An injured bowler’s rehabilitation plan is typically coordinated by the team physiotherapist. The physio is not only responsible for consulting with the player for treatment and specific exercise prescription (such as transverse abdominis and multifidus retraining), but also liaising with coaching staff to determine appropriate training, strength and conditioning and match play programs. Prehab drills have become invaluable tools for introducing bowling skills into training in a controlled and quantifiable way. Good communication between a player’s coach/es, physio, and strength and conditioning trainer allows individual prehab programs to target areas of need (with respect to technical development, strength and proprioception deficits) while protecting injured or ‘at risk’ tissues.

The beauty of the Bowling Prehab concept lies in that it innovatively incorporates many principles and strategies of motor relearning into the player’s everyday training sessions and environments. Prehab challenges components of the bowling action and manipulates the systems of motor control by varying the constraints of the task, environment and sensorimotor mechanisms of the bowler.

Progressing a player through drills amplifies the level of control and intrinsic feedback required. Principles of overload are also applied, by increasing momentum with a ball in hand, increasing the complexity of bowling movements, introducing unstable surfaces, and increasing load and dosage.

A pivotal component of Bowling Prehab is the environment, which is best conducted in the cricket ‘nets’ or on the wicket. Drills seek to mirror the particular bowling action of the player and target vision at ball release. The aim is to develop a ‘perfect practice model’ where new movements are developed and practised safely at high repetitions in the same environment as a game.

So, it may just provide an all-important link between ‘boring’, often uni-dimensional physio exercises and developing the skill of bowling itself.

Assessment

As with most good programs, a ‘one size fits all’ method of prescription is not appropriate. Assessing a player’s performance of the following tasks and progressing each in difficulty helps to prescribe an appropriate program for the player at that time. The coach and physio observe how stable the bowler is during stationary and dynamic movements and the way they control their momentum from their run-up to the jump, single leg landing and delivery phases of the action.

Preliminary:

- Squat—decline board, minitramp (static), minitramp bounce and squat



- Single leg squat—decline board, minitramp (static), minitramp bounce and squat.



Cricket-specific:

- Run-up to 'crease'
- Back foot landing—jump to back foot land, short run-up to jump and hold, jump onto minitramp and hold, short run-up onto minitramp and hold



- Front foot landing—back foot to front foot and hold, short run-up and front foot hold, short run-up onto minitramp and hold



- Follow through—slow deceleration front foot to follow through (arabesque), follow through off minitramp.

Visual recordings of these assessments assist the coach in identifying any technical errors, weakness in different parts of the skill and any inconsistencies in performance. The physio's role in the assessment is equally important in identifying functional weaknesses, biomechanical inefficiencies and motor control problems.

The player's responses to different types of loading and environmental challenges during 'prehab assessment' are especially informative and give direction for exercise prescription.

Exercise prescription

The entry level for a player's prehab exercises are based on the results of assessment. Appropriate drills may initially require some cuing/feedback for correct execution, and improve in consistency with practise. Gradually, dosage and load is increased and feedback is withdrawn before each drill is progressed.

The physio must also make recommendations regarding the inclusion, exclusion or modification of specific drills where a player is injured. Some examples of Bowling Prehab drills conducted on the pitch while aiming at the target (wickets) are as follows:

- Theraband resistance harness in run-up to jump— feedback and cuing



- Medicine balls from back foot to front foot landing and follow through—momentum and strength



- Minitramp—shock attenuation, proprioception and control
- Arabesque/follow through—deceleration and eccentric control.



In this way, the following aims can be achieved:

- Technical components of the skill of bowling are practised, while specific feedback is received (internally and externally)
- Enhanced physical preparation with respect to strength and endurance, control and consistency
- Reduced total bowling workload.

Prehab for all ages, stages and sports

The principles involved with the assessment, prescription and progression of prehab programs are not limited to bowling, the sport of cricket, or even elite athletes.

Integrating an athlete's injury prevention and rehabilitation exercises into their training/game environment, with specific reference to the skill or the sport, appears to have many advantages. These include:



Photo: John Orchard

- Varying and challenging specific components of the skills involved in an appropriate and relevant manner for individual athletes
- Giving the physio and coaches a forum to combine technical, strength and motor control objectives into training sessions
- Providing the opportunity for a safe and metered transition from basic rehabilitation to return to training.

These benefits seem desirable in a range of sports, from basketball to volleyball and gymnastics to javelin. 'At risk' sporting populations such as kids and adolescents may also benefit from a prehab approach to injury prevention and rehabilitation.

Studies investigating the relationship between workload and injury (particularly low back injury) in adolescent fast bowlers have resulted in bowling restriction guidelines based on age. For example, 15-year-old bowlers are restricted to a maximum of 36 deliveries per session, four sessions per week. Introducing prehab drills to training sessions allows further

development of their proprioception, strength and control for the skill within workload recommendations. This aims to maximise performance while minimising the risk of injury.

Whether the participants are involved at social, amateur or elite levels, getting involved as physios and applying prehab-type principles may enhance our injury prevention and rehabilitation strategies. Anecdotal evidence is mounting to support the role of prehab intervention in reducing injury/re-injury rates. So, our quest to determine any carryover benefits of this approach for fast bowlers and the sport of cricket warrants further prospective studies.

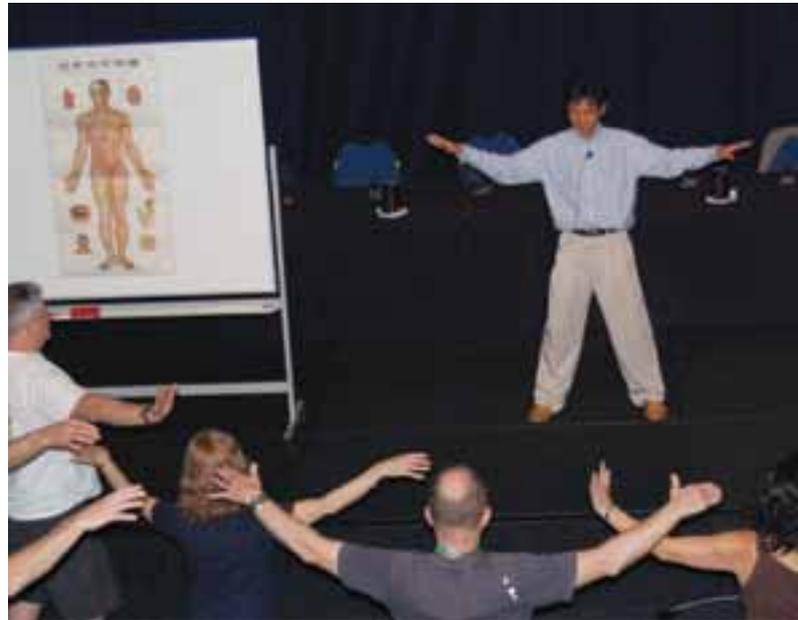
Kym Hartwich

BPhty (Hons) UQ, MPhty (Sports) UQ

Photography by Kym Hartwich unless otherwise stated.

Kym Hartwich is principal physio/director at Allsports Physiotherapy Indooroopilly (Brisbane), and a clinical educator at the University of Queensland.

Developing an understanding of ‘disciplines’, multidisciplinary and inter-disciplinary



Introduction

Sports medicine is difficult to define because it is not a single specialty, but a field that is a collection of allied health professionals, researchers, and educators from a variety of disciplines. Organisations that present titles of ‘Sports Medicine’ attached to the country of origin, tend to exist as membership associations and appear to portray umbrella organisations. Umbrella sports medicine organisations constitute a membership of multiple disciplines and act in capacities of member serving and the dissemination of professional knowledge to interests in sports science and medicine. Both, Sports Medicine Australia (SMA) and the American College of Sports Medicine (ACSM) portray characteristics of umbrella associations through mission statements that indicate they are multidisciplinary or cross-disciplinary organisations in terms of membership and professional activities. The purpose of this article is to provide a literature review of characteristics defining ‘disciplines’, multidisciplinary and inter-disciplinary.

Literature Review

Benbasat and Zmud¹ argue that the primary means in which a ‘discipline’ identifies its boundaries and intellectual core, is through the research topics that comprise ‘discipline’ specific activities. Problems that affect members of a new population

as they work towards succeeding in their environment include; creating effective routines and competencies (learning issue), and building relationships with elements in the environment (legitimacy issue) that they may not be aware of, or understood in their existence^{1,2}.

Buker³ suggests that a ‘discipline’ is often defined by its administrative structures such as departments, graduate programs and professional associations. However, a ‘discipline’ may have greater intellectual integrity beyond a basic definition, in terms of characteristics summarised from Buker’s work in the following five points:

1. A ‘discipline’ has a past, a present and a future, and thus confers identities of its members. Identities enable individuals to position themselves within academic fields that are a defined ‘discipline’. There is an apparent recognisable membership with some shared activity that is carried on by generations of academics and/or practitioners to produce knowledge. The past, present and future narrative of a field of inquiry creates a community of scholars to evolve. These scholars are further judged by current recognised professionals in the field, for tenure or accreditation, as a process for contributions to the future developments of the ‘discipline’. The identities of a ‘discipline’ are further enhanced through post-graduate degrees, journal publications, and the creation of professional associations.

2. A 'discipline' shares a vocabulary that facilitates communications unified by focusing on an understanding of particular phenomena through a set of common concepts and terms, which fosters a body of scholarship and a canon designed to retain knowledge.
3. A 'discipline' has a set of key questions that guide inquiry such as – how can governance be achieved, how can communities be formed, how can moral and ethical concerns be articulated in the practical efforts within systems of governance, and what is the legitimate authority for rule.
4. A 'discipline' has a set of strategies of interpretation, referring to building on the work of others, thus requiring shared methods. However, new questions of inquiry tend to demand new methodologies that transform the epistemological activity of a 'discipline'. The mix of independent specialty fields may create a wide range of epistemological concerns in a sense of 'opening the door' for disagreements in the analysis of a particular phenomenon. A 'discipline' may not require the adherence to a single epistemology due to expectations placed on those with advanced degrees in a field. Expectations involve a critical review of the range of epistemologies used in their field to evaluate knowledge presented by scholars.
5. A 'discipline' produces shared epistemological to understand the nature of knowledge with reference to limits and validity towards what counts as evidence.

Garner 4 defines multidisciplinary as teams and includes the concept of 'gatekeeper', being the member who determines which other disciplines are invited to participate on the research team. Both Garner 4 and Hoeman 5 agree that the inter-disciplinary team process expands the multidisciplinary team through collaborative communication rather than shared communication. Therefore, team members are involved in problem solving beyond the confines of their own discipline.

According to Buker 3 a 'discipline' has the opportunity to alleviate, to some degree, the competitive pressures that are associated with groups competing with each other for available resources. This can be accomplished by 'disciplines' engaging in inter-disciplinary activities, yet may bring about implications not only for one 'discipline', but all 'discipline groups' who have benefited from a common meeting place where threats of competitors can be put aside.

Salter and Hearn define a 'discipline' in terms of reflecting both intellectual and institutional situations, however differentiating

between 'disciplines' is arbitrary and inconsistent 6. In terms of research project work, Whitfield and Reid 7 report that participants of their study indicated that inter-disciplinarity moves the group away from power struggles towards a sense of ownership; while other participants suggested that a single discipline group will dominate and drive the research process. Salter and Hearn 6 suggest that the power is associated with the 'disciplines' and there is an absence of equality in an inter-disciplinary process. For example, specific core disciplines, fields of study or departments at a University may hold the balance of power throughout an inter-disciplinary directed research project.

Many 'disciplines' seem to be prevalent in terms of methodological and epistemological conflicts, and the certainty that an individual represents the scope of their respective discipline may be questionable⁷. Whitfield and Reid⁷ suggest that inter-disciplinary research involves negotiation and agreement, yet the process may force researchers to become protective of their discipline, which may lead to competition over which 'discipline' will dominate in examining the research problem. Inter-disciplinary research differs from multidisciplinary research, as it focuses on integration, cohesion and synergy of the group achieving the final product⁸. Multidisciplinary, as opposed to inter-disciplinary research refers to a number of researchers representing different 'disciplines' are brought together; however the research problem does not require integration, but individual scholars work on the problems relevant only to his/her 'discipline'⁸.

Barton⁹ defines 'disciplines' as 'disciplinarity' which identifies the tools, methods, procedures, concepts and theories that account coherently for a set of objectives or subjects. These constructs are shaped and reshaped over time by external contingencies and internal intellectual demands, and a 'discipline' evolves to organise and concentrate experience into a particular worldview.

Buker³ suggests that there is a difference between methods to conducting research work, in terms of a 'disciplinary' approach and one that is inter-disciplinary, in so far as a multidisciplinary approach may be the appropriate terminology found between disciplinary and inter-disciplinary. This notion has been conveyed in the work of Allen and Kitch¹⁰, who define multidisciplinary as an approach to research work from two or more different disciplines, while an inter-disciplinary approach integrates a number of disciplines towards the creation of a new epistemology and the 'fusion of fields'. These researchers argue that there is a lack of true inter-disciplinary research,



even though there may have been productive collaboration among disciplines and, they fear the prospect of fragmenting a 'multidisciplinary' field, due to a 'disciplinary drift'. The claim to disciplinary status does not necessarily mean staking out territory and defending turf, but more so to crossing disciplinary boundaries into newer fields, as the boundaries may be less reified than old entrenched fields³.

The act of bridge building, meaning the establishment of connections between 'disciplines' and restructuring, suggesting radical changes in the organisation of knowledge within and across fields is indicative to metaphors describing 'inter-disciplinarity'¹¹. Klein¹¹ (p. 56) suggests a notable failure of 'inter-disciplinarity' as,

... juxtaposition of disciplines is essentially additive, not integrative ... the participating disciplines are neither changed nor enriched and lack the well defined matrix of interactions, meaning disciplinary relationships are likely to be limited and transitory..... The persistence of disciplinarity can be seen when scholars still work on problems posed by their original disciplines, rather than integrate new concepts, methods, epistemologies and cultures of other disciplines; thus, they neither share nor change disciplinary worldviews.

A summary of the literature describing characteristics of a 'discipline' include: forming professional associations; developing academic graduate programs; journal publications;

identities of members; a recognised membership; shared activities; a community of scholars; accreditation standards; and shared epistemology. Descriptions of multidisciplinary found in the literature include 'Gatekeeper' and shared communications. Concepts of inter-disciplinary summarised from the literature include collaborative communications, negotiation and agreement, integration, cohesion, synergy, fusion of fields – new epistemology, disciplinary drift, and a sense of ownership.

Conclusions

The literature describing 'disciplines', multidisciplinary, and inter-disciplinary appears to be mainly expressed in terms of academic and research settings. The limitations of the literature reviewed neglects the understanding of these concepts in the context of organisational change and development, such as 'discipline' groups of sports medicine and the multidisciplinary membership approach found in Sports Medicine Australia. The author of this article has recently submitted a dissertation that explores (in part) the concept of 'disciplines', in activities of change in health sciences professionals evolving to the development of 'discipline groups' of sports medicine and, change activities of Sports Medicine Australia evolving to multidisciplinary and inter-disciplinary approaches.

Robert (Bob) Gurney

BPE, M.Sc., Ph. D candidate

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Calendar of upcoming events

Sports Physiotherapy Australia (SPA)

Events

SMA/Australian Lifesaving Academy Spinal Injury Management

Date: Saturday 20 February 2010

Time: 9am to 1pm

Cost \$110

Venue: Hockey Olympians Room, State Netball and Hockey Centre, Brens Drive Royal Park, Parkville

Only available to SPA members

For more information visit contact Sports Medicine Australia Victorian Branch on 03 9674 8777.

Sports Dietitians Australia (SDA)

Events

Sports Dietitians Australia will present a one-day professional development opportunity tailored specifically to meet the needs of personal trainers, school sport coaches, athletes, health and physical education teachers and anyone else interested in nutrition for the active person.

2010 Course Dates

NSW: Saturday 20 February 2010

VIC: Saturday 27 February 2010

SA: Saturday 20 March 2010

QLD: Saturday 17 April 2010

For further information phone 03 9926 1336 or visit www.sportsdietitians.com.au/NEScourses/

Australian College of Sports Physicians (ACSP)

Events

Australian College of Sports Physicians (ACSP) Clinical Sports Medicine 2010: Tendons Conference

Presented by sports physicians, designed primarily for general practitioners, allied health practitioners and specialist trainees.

Date: Sunday 7 March 2010

Time: 8.30am – 4.30pm

Cost \$220 (including GST)

Maximum delegates: 100

Venue: NSW Institute of Sport, Olympic Park, Sydney

Enquiries: Christine de Villeneuve 02 9223 4055

Email: acsp@bigpond.com

Online registration: www.acsp.org.au

Australian Association for Exercise and Sports Science (AAESS)

News

AAESS will trade as ESSA from 1 January 2010

From January 1 the Australian Association for Exercise and Sports Science will change its trading name to Exercise & Sports Science Australia (ESSA). This follows extensive market research and a review of the association's brand image.

A new logo has been developed and the website address will change to www.essa.org.au in January 2010.

However, the current address will remain active and automatically link for the next 12 months.

Sports Medicine Australia – Victoria

Events

Chris Petropoulos will be presenting 'Taking the Pain Out of Shins: Diagnosis, Management, Prevention' on Wednesday 17th March 2010 as part of the Sports Medicine Australia – Vic Branch 2010 Café Series.

For more information please go to www.smavic.org

Sports Doctors Australia (SDrA)

News

Sports Doctors Australia is continuing to establish strong ties with The Royal Australian College of General Practitioners in the forming of a Faculty of Specific Interest in Sports Medicine. The establishment of such a Faculty within an established College has significant benefits for the Fellows and Members of SDrA, including the recognition and credentialing of suitably qualified sports doctors.

One of the main focus points of SDrA is to provide sports medicine education to a variety of groups including those which are community based and doctors undertaking further training. SDrA sees itself as a group of doctors with recognised sports medicine skills and qualifications who are able to provide medical care to individuals and groups using a holistic medical model incorporating other recognised skills and qualifications such as General Practice and Emergency Medicine.

2010 will be a year where SDrA will continue to strengthen ties with RACGP, ACSP and SMA.

For more information visit www.sportsdoctors.com.au

Events

AAESS 2010 CONFERENCE



Research to Practice: Science & Nutrition in Exercise & Sport

Gold Coast, Queensland 7–11 April 2010

Theme: Research to Practice

Conference papers and sessions will focus on the broad areas of exercise and sports science, clinical practice and sports nutrition. Through linking with Sports Dietitians Australia, the conference will also incorporate and expand upon the importance of diet to sport and exercise. Two days of pre-conference workshops will also be held.

This conference is a must for all researchers, practitioners and students involved in the science and nutrition of sport and exercise.

Conference registrations are officially open. Early bird registrations close 19 February 2010. For further information and regular updates visit: www.aaess.com.au/conference2010.

For more information visit www.aaess.com.au

Andrew Garnham – acsp@bigpond.com

2010 ASICS CONFERENCE OF SCIENCE & MEDICINE IN SPORT PORT DOUGLAS 4-6 NOVEMBER




CALL FOR PAPERS

INVITATION

The organisers of the Asics Conference of Science and Medicine in Sport to be held at the Sheraton Mirage Port Douglas, Australia, between 4-6 November 2010, invite the submission of abstracts that address the conference theme "Hot topics in the tropics".

Abstracts from all aspects of sports medicine, including sports science, sports medicine, physical activity promotion and injury prevention are invited.

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

All abstracts must be submitted online at sma.org.au/asics-conference and must be received by 31 March 2010.

CONFERENCE HIGHLIGHTS

~ Speakers including:
Refshauge Lecturer Professor Peter Fricker
Professor Lars Engebretsen

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

~ Earn professional development points

Journal of Science and Medicine in Sport

Top 20

1. Maximising performance in triathlon: Applied physiological and nutritional aspects of elite and non-elite competitions
Volume 11, Issue 4, Pages 407–416
Bentley, D.J.; Cox, G.R.; Green, D.; Laursen, P.B.
2. Effect of water immersion methods on post-exercise recovery from simulated team sport exercise
Volume 12, Issue 3, Pages 417–421
Ingram, J.; Dawson, B.; Goodman, C.; Wallman, K.; Beilby, J.
3. Does warming up prevent injury in sport?
Volume 9, Issue 3, Pages 214–220
Fradkin, A.J.; Gabbe, B.J.; Cameron, P.A.
4. Specific associations between types of physical activity and components of mental health
Volume 12, Issue 4, Pages 468–474
Asztalos, M.; Wijndaele, K.; De Bourdeaudhuij, I.; Philippaerts, R.; Matton, L.; Duvigneaud, N.; Thomis, M.; Duquet, W.; Lefevre, J.; Cardon, G.
5. Heart rate and blood lactate correlates of perceived exertion during small-sided soccer games
Volume 12, Issue 1, Pages 79–84
Coutts, A.J.; Rampinini, E.; Marcora, S.M.; Castagna, C.; Impellizzeri, F.M.
6. The effects of increased absolute training intensity on adaptations to endurance exercise training
Volume 12, Issue 4, Pages 485–489
McNicol, A.J.; O'Brien, B.J.; Paton, C.D.; Knez, W.L.
7. Objective monitoring of physical activity in children: considerations for instrument selection
McClain, J.J.; Tudor-Locke, C.
8. A hitchhiker's guide to assessing young people's physical activity: Deciding what method to use
Dollman, J.; Okely, A.D.; Hardy, L.; Timperio, A.; Salmon, J.; Hills, A.P.
9. Applying GPS to enhance understanding of transport-related physical activity
Duncan, M.J.; Badland, H.M.; Mummery, W.K.
10. Vertical jump in female and male basketball players – A review of observational and experimental studies
Ziv, G.; Lidor, R.
11. Effect of warm-up on run time to exhaustion
Volume 12, Issue 4, Pages 480–484
Wittekind, A.L.; Beneke, R.
12. Validity and reliability of instruments to assess potential mediators of children's physical activity: A systematic review
Brown, H.; Hume, C.; ChinAPaw, M.
13. The effects of compression garments on recovery of muscle performance following high-intensity sprint and plyometric exercise
Duffield, R.; Cannon, J.; King, M.
14. Australian Association for Exercise and Sports Science Position Statement on Exercise and Hypertension
Volume 12, Issue 2, Pages 252–257
Sharman, J.E.; Stowasser, M.
15. Evidence of sensorimotor deficits in functional ankle instability: A systematic review with meta-analysis
Munn, J.; Sullivan, S.J.; Schneiders, A.G.
16. Strength and conditioning in tennis: Current research and practice
Volume 11, Issue 3, Pages 248–256
Reid, M.; Schneiker, K.
17. Negative effect of static stretching restored when combined with a sport specific warm-up component
Taylor, K.L.; Sheppard, J.M.; Lee, H.; Plummer, N.
18. Preventing lower limb injuries: Is the latest evidence being translated into the football field?
Volume 12, Issue 4, Pages 452–456
Twomey, D.; Finch, C.; Roediger, E.; Lloyd, D.G.
19. Methodological considerations in using accelerometers to assess habitual physical activity in children aged 0–5 years
Cliff, D.P.; Reilly, J.J.; Okely, A.D.
20. Gender, level of participation, and type of sport: Differences in achievement goal orientation and attributional style
Volume 12, Issue 4, Pages 508–512
Hanrahan, S.J.; Cerin, E.

JSAMS Podcasts

JSAMS is proud to provide podcasts highlighting particular issues and papers in each of our 6 issues a year are now available through a series of interviews with authors, researchers, and practitioners. In addition we aim to include discussions in more general terms matters of relevance to sports medicine and sports science.

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January JSAMS

Be sure to have a look at this bumper issue!

Included:

Does exercise evoke neurological symptoms in healthy subjects? By S. Alla, S. S. Sullivan, P. McCrory, A. Schneiders, and P. Hancock

Efficacy of injury prevention related coach education within netball and soccer. By S. Gianotti, P. Hume and H. Tunstall

Riding with the sharks: Serious leisure cyclist's perceptions of sharing the road with motorists. By J. O'Connor and T. Brown

The effects of compression garments on recovery of muscle performance following high intensity sprint and plyometric exercise. By R. Duffield, J. Cannon and M. King

Static and cyclic stretching: Their different effects on the passive torque-angle curve. By A. Nordez, P. McNair, P. Casari and C. Cornu



**4th International Congress on Physical Activity and Public Health
31 October - 3 November 2012, Sydney**

incorporating:

Australian Conference of Science and Medicine in Sport
National Physical Activity Conference
National Sports Injury Prevention Conference

For the diary...

POWERbreathe – making breathing easier

Ever wished there was something to prescribe patients with dyspnoea? Well now there is...



Dyspnoea (shortness of breath not caused by exercise) is a common feature of many disorders. Its source may be respiratory, cardiovascular, neuromuscular, or even psychological. Regardless of its origin, a common denominator in dyspnoea is inspiratory muscle weakness.

Unfortunately the inspiratory muscles exhibit the 'use it or lose it' phenomenon and become detrained in the absence of physical activity. This leads to a downward spiral of inactivity and dyspnoea that is observed in many chronic diseases and the elderly.

The good news is that inspiratory muscles can be trained as safely and easily as any other muscle group, yielding improvements in muscle strength, power and endurance as well as structural and biochemical adaptations.

More importantly, inspiratory muscle training (IMT) reduces dyspnoea during exercise and activities of daily living, as well as improving exercise tolerance and quality of life, particularly in patients with Chronic Obstructive Pulmonary Disease (COPD).

Introducing POWERbreathe

The POWERbreathe inspiratory muscle trainer is a drug-free treatment that helps patients help themselves.

POWERbreathe applies the principles of resistance training to the inspiratory muscles, and can be thought of as 'dumbbells for the diaphragm', i.e. when muscles are overloaded regularly for a period of a few weeks, they adapt, becoming stronger and more resistant to fatigue.

One of POWERbreathe's greatest strengths is that it is easy and quick to use, with a training regime that has been validated in a large number of Randomised Controlled Trials.

Training requires just 30 breaths twice daily for the first 12 weeks; thereafter, maintenance training is just three times per week. And, as everyone is different, POWERbreathe's loading mechanism has a wide range of settings and has provision for training to progress as the inspiratory muscles become stronger.

The device is also suitable for treating dyspnoea in a wide range of patients, including those with severe exercise tolerance, cardiovascular risk factors and severe disability.



POWERbreathe results

- Reduces dyspnoea by 36%. Yields improvements within first few days of use and measurable improvements in exercise tolerance in three weeks.
- Improves exercise tolerance by 28%.
- Reduces consumption of b2-agonists up to 79%.
- Early research has shown four weeks of POWERbreathe IMT reduced lactate concentrations at equivalent intensities of exercise, as well as increasing endurance and improving time trial performance, and speeding recovery during repeated sprinting.
- Patients with asthma experience improvement in symptoms, quality of life, and reductions in the consumption of medication of up to 79%.
- Reduces the use of healthcare resources by patients with COPD, including primary care consultations by 23%.

POWERbreathe may also help the following conditions:

- Elderly people with non-specific dyspnoea.
- Cancer.
- Cystic fibrosis.
- Neuromuscular disease.
- Parkinson's disease.
- Prior-polio.
- Spinal cord injury.
- Sleep apnoea and snoring.

POWERbreathe is available in the UK as a prescription product and is approved by the Department of Veteran Affairs in Australia.

For more information and a list of scientific publications detailing the science behind the claims made above visit www.powerbreathe.com

- Class 1 medical device.
- Drug free treatment for dyspnoea.
- Ideal for patients with asthma, COPD and heart failure.
- 10 times more effective than oxitropium bromide for improving exercise tolerance and quality of life in patients with COPD.
- Research and developed by leading UK scientists.
- Approved by the NHS and PPA for prescribing.
- Now available for prescription.

'I used the Powerbreathe as part of my preparation for the Beijing Olympics, both as a lung-strengthening device and also before racing. In a sport like rowing, where even one or two per cent can make a difference, you are looking for the edge. I found the Powerbreathe to be a very effective tool in improving my lung capacity and endurance.'

– David Crawshay, Gold Medalist, Rowing Skulls Division Beijing Olympics 2008



The PowerBreathe unit comes in three different colours representing different load pressure settings:

- **Green** (wellness model) – lower load threshold setting. Suitable for the elderly as well as individuals with mild to severe respiratory conditions.
- **Blue** (fitness model) – medium load threshold setting. Suitable for healthy/active individuals.
- **Red** (sports model) – high load threshold setting. Suitable for very active individuals who wish to improve their sports performance.