The Pain Issue

Neural representation training
Individualised plans for low back pain
Patellofemoral pain
Tendon pain

- Shin pain guide
- Pre-season injury screening
- Exercise and weight gain in pregnancy
- Sport and exercise medicine in Canada
- Working in Olympic sports medicine
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SMA CHAIRMAN, ANDREW JOWETT DESCRIBES HIS RELATIONSHIP WITH PAIN AS A SPORTS MEDICINE PRACTITIONER.

For those in the practice of sports medicine and related disciplines, pain is the number one reason for patients to present, acute or chronic, traumatic or overuse. Fortunately, we have so many good pain scientists on our doorstep in Australia who are helping us translate the science into practice. It is imperative that we understand pain better ourselves and help explain it to our patients. Only with this understanding can we employ evidence-based treatments in our practice.

Exploring nociception suggests the pain signals from the body are more indications of actual or potential danger rather than a measure of actual damage. This danger signal is transmitted to the brain which evaluates the need for a response/protection. It also takes into account a number of modifying stimuli from surrounding areas of the brain to produce the “pain experience”. The biopsychosocial model has gained a place assisting both practitioners and patients to understand the complex mechanisms of pain. Recent research suggests that patients with chronic pain improve if they:

1. adopt biopsychosocial beliefs about their pain and;
2. feel they can independently self-manage their condition.

Musculoskeletal practitioners are beginning to recognise the value of cognitive therapies incorporated into their treatment of pain.

Fortunately for our disciplines physical activity also plays an important role in rehabilitation of pain but we often need to assist our patients to correctly evaluate the benefits and risks of exercise.

This issue considers both central and peripheral pain. With so much work done on back pain we recognise the poor correlation between pathology on imaging and pain, and also the changes that occur in the brain in chronic back pain. Perhaps it is no surprise that with tendons in the periphery we have a similar situation with poor correlation between imaging and pain, as well as changes occurring in the brain. Neuroplasticity describes the ability of the brain to adapt and change to stimuli. Whilst this can be a negative factor in the development of chronic pain, it can also be potentially used to benefit patients with pain.

Pain is a huge cost to our society in so many ways and I hope this issue encourages you to explore current research, examine your practice, challenge conventional thinking and understand pain better.
THE SHARING OF INFORMATION

SMA CEO, ANTHONY MERRILEES PROVIDES AN INTRODUCTION TO THE 2016 SMA CONFERENCE IN OCTOBER.

Community is a core value of Sports Medicine Australia. We are fortunate the SMA community has a broad and diverse range of skillsets that help us achieve our Vision of, “Sharing knowledge, training and information, to enhance the health of all Australians and prevent lifestyle diseases through facilitating their safe participation in sport and physical activity”.

A cornerstone of delivering on this commitment is Sport Health which offers unbiased, multidisciplinary information from our members, who are leaders within their own disciplines. This issue of Sport Health includes clinically relevant articles on the management of pain in the treatment of physically active people, which in recent years has become a widely recognised factor in rehabilitation programs. Articles on ‘Sports screening to predict the risk of injury’ and ‘New strategies for rehabilitating injured athletes’ are also featured.

The authors have again managed to articulate a significant sphere of evidence providing readers with clinically relevant information that can be applied and used immediately within daily practice.

Adding to the SMA Vision is the 2016 SMA Conference which will be held in October at the spiritual home of sport, the MCG. This annual conference continues our commitment to providing a multidisciplinary approach to learning and sharing of information with papers presented from many disciplines at the one event.

A certain highlight will include the Keynote Speaker, Dr Anthony Marsh who teaches Human Gross Anatomy and Biomechanics of Human Movement at Wake Forest University, North Carolina. Anthony and his colleagues have developed innovative methods to assess physical activity and function in older adults. Professor Peter O’Sullivan from Curtin University will present the prestigious Refshauge Lecture. He has developed a new management approach for disabling back pain called ‘cognitive functional therapy’.

In addition to the sharing of information to the SMA community we have also developed strong relationships with supporters of SMA, in particular ASICS and Victor Sports, who support many of our community programs. Through the SMA member portal and online store, the SMA community can access significant discounts on products such as tape and footwear.

I am sure you will enjoy this edition of Sport Health and I look forward to seeing you at the 2016 SMA Conference in October.
Tell me a little about your sports medicine background.

I’ve always been active in sport, with a strong family history in rowing, rugby and athletics. My grandfather was a Wallaby and my Godfather captain of the Wallabies. I was never going to play anything but Rugby in winter, despite growing up in Victoria. I coached several crews and teams through university and really loved the teaching and mentoring involved with this aspect of sport. As a third year resident, Paul McCrory told me about sports medicine and I started looking after the Collingwood Under-19’s and was hooked. I did the SMA post graduate course in Sports Medicine in 1989 with Karim Khan as one of my class mates. For 10 years I looked after three to five games a week(end) of various sports and representative teams, pretty much for the love of it. It was not a paying career option then (it still isn’t in most sports unfortunately) and twins put an end to my weekends on the sidelines. I’m forever grateful to Peter Brukner for talking me into joining Olympic Park Sports Medicine and doing my Australasian College of Sports Physician training. Eight years as State Training Co-ordinator for the College is something I wish he hadn’t talked me into (joking). From a work point of view, I’d done a lot of research on heat and weight loss in athletes and wrote the AFL heat policy and adapted this to tennis and oversaw the initial SMA policy. My interests had moved into groin pain by the early 90’s though and I presented and published (with Emma Colson) on the psoas major muscle, pelvic instability and the hip. Our series on 25 hip arthroscopies was the first in Australia, but it took a long time to get people to join the hip party. Chronic pelvic girdle and increasingly, pelvic pain became my life. We only got so far with fixing the biomechanics and I did my Masters in Pain Medicine under Professor Nikolai Bogduk and then my Fellowship of Interventional Pain practice. My practice now is 100 per cent chronic pain, be it deals with athletes, workers and others. 70 per cent is still chronic pelvic girdle pain and pelvic pain and I have worked full time at Metro Pain Group for the last 12 years. Research is still my passion and we have five staff in our research department. I’ve done book chapters on back pain, hip pathology, sacroiliac joint problems and the pelvis and had 20 peer reviewed papers.

What does a typical day for you consist of?

Gym most days at 6 or 6.30 am, weekly meetings at 7am for two to three hours on various boards, including our research board. Two days a week I do procedures and operate, including radio frequencies, spinal cord stimulation, peripheral nerve stimulation and sacral and pudendal nerve stimulation. Two days a week I consult. A half day a week I spend doing research.

What is your favourite aspect of your job?

This is a hard question. I love consulting and I love doing procedures nobody else is doing. We are fortunately in a position where new technologies from around the world come to us to do or be part of their level I/II/III ethics approved clinical studies. This is a very exciting space to be. We currently have 12 different trials...
going on at Metro Pain Group (MPG), from clinically proving an advanced pelvic brace to High frequency cervical spinal cord stimulation for chronic neck and upper limb pain. I guess the research is my main passion and love.

What has been the highlight of your career?
I don’t know if I have one that sticks out from others. Winning the College medal when I sat my second part ACSP exams; life membership of the Northern Knights football club; National President of SMA; getting the Research Foundation up and running; establishing the Pelvic Pain Victoria group have all given me joy. The highlight... I guess this would have to be the mentors I have been fortunate to have over my journey; Fred Better, Paul McCrory, Shane Conway, Peter Brukner, Michael Kenihan, Wendy Braybon, Jeni Saunders and Trish Wisbey-Roth. All lifelong friends. Hopefully I have put as much back in.

How did you become involved with SMA?
I had no choice. Fred Better told me I had to join, you did not say no to Fred! This was during the Australian Sports Medicine Federation post graduate sports medicine diploma. Paul McCrory talked me into joining the Victorian Branch council, where I eventually was the President. I went onto the National Council in 1991 and then the National Board where I was Vice President for four years and National President for two years. I am still on the Fellows Board, 27 years of service, where did that go?

What do you think the benefit of being a SMA member provides especially within your field?
Advocacy, education and mentorship. You will get out of SMA multiples of what you put into it. There are givers and takers in this world. You will not find takers in SMA. If you are passionate about your field and doing what you can to improve your knowledge and our knowledge of the field, you will not find a more supportive or engaging group. You will also find a group of likeminded people who will be friends for life.

NOWHERE in the world will you find an organisation like it. NOWHERE in the world will you find a conference like SMA’s as well.

Describe your role with Metro Pain Group.
I am one of the four partners in MPG. We have four other doctors in the group at present. We are the only Interventional Pain group in the world that has a combination of Musculo-skeletal physicians, Sports and Exercise physicians and Anaesthetists working in it. We were also the second private clinic in the world (The Cleveland Clinic beat us by a few months) to employ full time PhD’s in a research capacity. I am head of the Research Board. Day to day I am the same as all of the doctors, seeing chronic pain anywhere: facial, headache, upper/lower limb and trunk. I have a special interest in post-surgical pain and pelvic girdle and pelvic pain and this is the majority of what I get referred. I do seem to be the end of the line for a lot of people.

How did you come to be in this role?
If someone had said to me when I left medical school that I would end up treating chronic pain, I would have laughed at them. But life is what happens to you when you aren’t concentrating. I suffer from an insatiable curiosity and having to try and sort out what I don’t know. This led me from the psoas muscle, to the hip, to the Sacroiliac Joint and pelvis, to chronic pain to interventional pain. I’ve loved the journey, not sure where the next step will take me, but it will be fun. If I had one word of advice to someone starting out; do what you are interested in and passionate about, keep pushing the boundaries, the rest will look after itself.

Besides from sports medicine, what are you passionate about?
From a work point of view, Pelvic Pain. This is a hidden epidemic affecting up to 15 per cent of the population, males and females. Nobody asks about it and few people come forward with it.

From a life perspective, my family and friends are very important to me. I love travelling, hiking, skiing, reading, guitar, scuba diving, sailing and writing poetry... now you know all my secrets.

What’s the best piece of advice anyone has ever given to you?
Do what you are passionate about. whether a career, adventure or sport.

Name four people, living or not, you would invite for a dinner party and why?
Albert Einstein – Ok, I’m a physics nerd as well.
Bill Bryson – What a raconteur.
Andrew Denton – One of Australia’s smartest and funniest people, with true passion. If you have not listened to his podcast series Better Off Dead, you need to.
Bruce Springsteen – Just so I can say I had dinner with him one time (and hopefully scab an autograph).

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RESEARCHER DR. VALERIA BELLAN ATTEMPTS TO DEFINE THE SENSATION OF PAIN WHILE OFFERING A PREVIEW OF WHAT IS COVERED IN THIS ISSUE OF SPORT HEALTH.

Year 1999: the Wachowskis directed the movie "The Matrix". It took me quite a few years to start comprehending its deep meaning and its implications on our everyday life. Every single experience we have in our life is, in fact, an output of our brain. However cynical this vision might sound, I still feel that it does not make human life less poetic or romantic, as it is again our beautiful and mighty brain that allows us to add that hint of charm to simple electric responses.
However, we should as well acknowledge that as the smell of a rose is in fact a mere output of our brain, so are more unpleasant experiences, such as pain. Nonetheless, the smell of the rose or the experiences of pain are no less real, and why should they be? One might wonder why we need pain if it is such a hideous experience. There are few ways to respond to this question. In general, pain is necessary, because it signals danger or need for protection. This is why people who congenitally do not feel pain have a short life expectancy. Recently it has been suggested that, in evolutionary terms, chronic pain is not in fact a maladaptation, but can rather be considered an over-adaptation.
During sport activity, both elite athletes and recreational sportspeople at some point perceive some sort of pain. Is it the signal that we are pushing hard, but we are still safe? Or are we potentially in danger? The ability to interpret signals from our body is called interoception. Elite athletes are real experts in pushing themselves to the limit, stopping just before it is ‘too much’. Interestingly enough it has been shown that a high level of interoceptive awareness correlates with high resilience, i.e. the ability to cope with stressful situations. During a marathon, the amount of stress runners undergo is huge, both from physical and psychological points of view. After some kilometres it may feel as though the body is begging to stop and rest, but marathon runners do not. Why? Do they know how much pain is safe to bear? Do they more precisely know their limits and have skills to manage that kind of stress? Is this the ‘secret’ ingredient to make a perfect athlete? Probably not, of course, but we do need to keep in mind that people who make profit from sports (amateurs) and people who make profit from sport (athletes) might need to be approached differently. Such a point is very well made by two excellent articles in this issue.

JP Caneiro and Dr Leo Ng illustrate the necessity for a biopsychosocial approach for the treatment of back pain in athletes. They underline the multifarious nature of this issue in professional footballers and the psychological implications of feeling ‘weak and damaged’ in such a context. Although from a different perspective (patellofemoral pain), Dr. Natalie Collins offers support for the idea of a team approach. Here the necessity to specifically tailor the treatment to the individual is particularly emphasised, as patellofemoral pain is common in athletes but also in the general population and, as one might easily argue, the needs of different patients can differ profoundly. Nonetheless, no matter if you are going to Rio or you just enjoy a nice stroll with your dog every morning, pain is pain and one might argue that reducing it should be of equal priority in either case.

However, for those that have Tokyo 2020 in their plans, then another important need is to have the ability to forecast injuries in order to prevent them. Adrian Schulz and Michael Drew tell us everything we should know about pre-seasonal screening. By offering an overarching parallelism with weather forecast, they enucleate the pros and cons of such practice. We also learn (in case you didn't know) that in Melbourne, weather is rather unpredictable.

We are clearly learning a lot from research on elite athletes, but what Sarah Wallwork suggests in her elegant discussion is that there is also much that athletes can learn from ‘mere mortals’. Let’s step back to the idea that the surrounding world as we perceive it...
and all our sensations, from the roughness of a tree bark to the purest maternal love, are in fact brain outputs (again, however cynical this might sound). Finally, here’s the bright side of such a rational vision: as well as being able to train our muscles and bones in executing certain movements, so too can we train the neural components of those same movements. Sarah discusses the possibility to extend to sporting injuries an approach that has already proven very successful in the general population. And if you still have some doubts on the brain’s role in all of this, Dr Ebonie Rio will provide you even more arguments. Backed up by her recent publications in the British Journal of Sports Medicine, she explains why we should consider isometric exercises in patellar tendinopathy, providing evidence on what happens in the brain when exercises are painful.

What is pain, though? Anybody who has stepped on a sharp pebble walking barefoot can attest that, whatever pain is, one thing it is for sure: it is real. Isn’t it? Do not ask Morpheus (a character in The Matrix movie) because he would say: “What is real? How do you define real? If you’re talking about what you can feel, what you can smell, what you can taste and see, then real is simply electrical signals interpreted by your brain.” If, nonetheless, as I hope, the reader wants to know more about pain and how to use our brain, together with our muscles and tendons to tackle the problem, then the present issue will be very informative indeed.
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Sporting injuries can have huge implications for an athlete. Injury often means time away from sport, activity and movement which can have detrimental physical and psychological effects. Traditionally, rehabilitation after an acute sporting injury will focus on increasing strength, movement, endurance and skill until the athlete can again physically fulfil the requirements needed to participate in their chosen activity. This approach is clearly very important, however, given the advances in our understanding in cognitive and behavioural neuroscience, training the neural component of movement (i.e. the movement intention, planning and command phases) may be a vital part of rehabilitation that has thus far been neglected. Such an approach is yet to be vigorously tested in robust clinical trials within the sporting field, however promising results exist in other pain populations. Here, the possibility of training the neural component of...
movement is discussed in the context of sporting injuries.

Movement requires highly complex neuronal networks in the brain that represent the body and the space around the body. Without these networks, or ‘body representations’, we would not know the orientation and position of our body prior to or during movement, nor would we know where it is in space or in relation to our environment. For example, if you were to move your right arm above your head – with your eyes closed – your brain knows, with some accuracy, where your arm is in space. This is an example of a proprioceptive body representation. Similarly, if someone touches you on the leg, your brain is able to interpret – again, with some accuracy – where you have been touched. This is an example of a tactile body representation.

The overarching concept of neural representations, also known as ‘neurotags’, refers to the idea that large networks of neurons in the brain work together in synchrony to produce a given output. That output might be a specific movement, or a conscious thought or feeling, such as pain. In the case of a neural representation for a specific movement – such as the sequence of kicking a football – there would be several contributing ‘secondary neurotags’: one secondary neurotag might represent visual input (i.e. seeing where the football is in space), one might represent proprioceptive input (i.e. knowing where your body and limbs are in space), another might represent prior experience (i.e. you have done this 10,000 times before so you know it very well), and so on. Each of these secondary neurotags are represented in very different areas of the brain, yet they converge to form a neural representation for a highly specific movement command – what we call a ‘primary neurotag’. The output of this primary neurotag is movement.

This ‘neural representation’ framework is well-established in the pain sciences research field – but instead of the primary neurotag output being a movement, ‘pain’ is the primary output. Here, secondary neurotags might include nociceptive input (where ‘danger’ messages are sent from the tissues indicating threat or potential threat to body tissue), memory and expectations (such as “last time I kicked a football with no shoes on it really hurt, therefore this will probably hurt too”), vision (you can see blood on your toe), and so on. Each of these secondary neurotags work in synchrony and contribute to a primary neurotag – of which the output might be pain. This framework has been an important advance in the pain research field, because it enables phenomena such as phantom limb pain (where pain is felt in a limb that no longer exists) and situations where tissue damage is extensive, yet no pain is experienced.

One very important attribute of neurotags is that the more frequently they are run, the stronger and more precise they become. For example, the more you practice a movement, the more the neurotags for that movement are run, and the more efficient you become at performing that movement. The same is for pain neurotags. The more frequently they are run, the stronger the neural connections and the easier it is for these pain neurotags to become activated.

After sporting injury, movement is often adapted to avoid pain and further injury. This can have both positive and negative implications for the athlete: load is taken away from the injured body part to allow recovery; the movement neurotags for the given activity no longer run, or run less often (meaning that these neurotags...
become ‘weaker’); new movement neurotags are introduced to include avoidance behaviour. Returning to sport then becomes more challenging, because the once accurate and precise movement neurotags need to become re-established and re-strengthened. This concept underpins why some athletes and performers do visualisations of their sport (for example, a dancer may visualise rehearsing a difficult movement sequence to help them get better at it) – purely visualising a movement sequence can help to strengthen these movement neurotags.

In the chronic pain research field, ‘neural representation training’ has proven successful at reducing pain in some populations. Such training includes graded motor imagery and tactile acuity training. Graded motor imagery attempts to maintain healthy movement neurotags and involves a graded three step process: left/right body-part judgments, imagined movements and mirror training. Left/right judgment training involves identifying images of the body as belonging to, or movement towards, the left or right side (such as a left hand or a right hand). Such a process activates similar areas in the brain that would be required to actually perform the movement from your current position to match the position seen in the image. Normative response times and accuracy percentages for performing this task can be found online at www.noigroup.com. Once proficient at this task, imagined movements are performed. This is as it sounds: people imagine movement of the painful limb or body part, but without moving and without activating any pain or movement neurotags. Finally, mirror therapy involves using a mirror to view the healthy limb during movement but from the position of the painful limb. In a way, it involves ‘tricking’ the brain into believing that the painful limb looks and moves as the healthy limb. Each of these tasks activates an increasing number of the neural connections associated with movement, but avoids running the primary movement neurotag. The second neural training approach is tactile acuity;
which is the ability to proficiently locate the position of a stimulus on the body’s surface. Also included under the tactile acuity banner is ‘two-point discrimination’ – being the minimum distance between two stimuli such that they are felt as two stimuli, not one. Training tactile acuity involves practising tactile localisation tasks over the painful region, and such tasks have proven to be beneficial in people with complex pain conditions.

This is all very relevant to sporting injuries because some of the changes to secondary neurotags that occur after injury can be detrimental to performance and recovery. Whether it be a secondary neurotag associated with memory of a certain movement being painful, avoidance behaviour, expectations of injury recovery, or even something as simple as an association that has been made between an injury and a competition venue or opponent. We may not be aware of what these secondary neurotags are, however, if we can be aware that these changes occur and if we can maintain healthy neurotags in rehabilitation, our neural representations will be ripe and ready when the body is capable of the physical demands required.

The next step in this line of thinking will be to rigorously test these approaches in clinical trials within sporting populations, however evidence from the pain field suggest that there is good reason to believe that neural representation training may be of great benefit for athletes after sporting injury.

In a way, it involves ‘tricking’ the brain into believing that the painful limb looks and moves as the healthy limb.

ABOUT THE AUTHOR
Sarah Wallwork has just completed her PhD at the University of South Australia - her current research interest lies in better understanding the relationship between threat and pain.

FOR THE INTERESTED READER:


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Many sports medicine practitioners know the frustration of managing patients and athletes with patellofemoral pain (PFP). While some patients successfully return to pain-free function following treatment, others experience ongoing symptoms or flare-ups despite our best efforts. For the practitioner, this can challenge our knowledge of the evidence for PFP treatment, our clinical experiences, and our beliefs about expected outcomes and the patient’s commitment to their rehabilitation. Recent research provides insight into factors influencing a patient’s prognosis and treatment response, and how we can optimise outcomes.

PATELLOFEMORAL PAIN CAN HAVE A SUBSTANTIAL INDIVIDUAL BURDEN

An understanding of PFP and the associated burden can help practitioners empathise with patients. The primary symptom is anterior knee pain around or behind the patella that can range in severity from mild to severe. PFP is typically aggravated by activities that load the PF joint (e.g. squatting, stair ambulation, running, jumping) and sustained knee flexion (e.g. prolonged sitting). This means that symptoms can occur with usual everyday activities – domestic duties, school or work tasks, and sport and exercise.

PFP affects people of all ages, but the onset is commonly in adolescence and early adulthood. Although once considered a benign, self-limiting condition (akin to ‘growing pains’), we have increasing evidence to the contrary. Many adolescents and adults with PFP experience long-term recurrent and persistent symptoms (40-94 per cent)\(^1\)\(^-\)\(^5\). We found that 40 per cent of PFP patients have a poor outcome at one year, which increased to 57 per cent after five to eight years\(^4\)\(^-\)\(^5\). The most consistent predictors of poor outcome in these studies were greater baseline pain severity and longer duration of pain\(^4\)\(^-\)\(^5\). Radiographic evidence of early knee osteoarthritis is present in 40 per cent of adults aged 26-50 years with PFP (Kellgren & Lawrence [KL] grade 1), and 25 per cent have established osteoarthritis (KL\(\geq\)2), which may have further implications for long-term pain and disability.

Given its onset, aggravation with daily activities, and persistent nature, PFP can have a profound impact on those affected. Adolescents and young adults with PFP are less physically active than those without pain\(^7\)\(^-\)\(^8\). If not optimally managed, this may set up a lifetime of physical inactivity and general and mental health consequences. Practitioners must consider persistent or recurrent PFP as a chronic pain condition, and how this may affect patient buy-in and treatment response. This is especially pertinent for patients who have consulted multiple health practitioners in the past with minimal or transient benefits.
PATELLOFEMORAL PAIN IS NOT A HOMOGENOUS CONDITION

Although PFP symptoms are generally consistent between patients, the factors contributing to onset, persistence and recurrence of symptoms differs. Research has mainly focused on biomechanical factors that predict onset of PFP (risk factors) or are present in people with PFP (associated factors). These include (but are not limited to) greater dynamic knee valgus during functional tasks\cite{9,10}, greater hip adduction and/or internal rotation angle during gait\cite{11,12}, lower quadriceps\cite{13,14} and hip muscle strength\cite{15}, and greater foot pronation and mobility\cite{16,17}. Patients may present with one or multiple contributing factors, in various combinations.

Identifying contributors to each individual’s PFP is fundamental for selection of appropriate interventions to address these, and the success of treatment. While there is individual variability in presentation, emerging studies on subgrouping of PFP patients provide a starting point. A recent paper published in the *British Journal of Sports Medicine* used simple clinical tests to identify three PFP subgroups based on biomechanical factors: (i) strong (quadriceps, hip abductors); (ii) weak (quadriceps, hip abductors) and tighter (rectus femoris, gastrocnemius); and (iii) weak (quadriceps, hip abductors) and pronated foot (Foot Posture Index: mean score \(6\pm3\))\cite{18}. Ongoing research on subgrouping, including the effectiveness of targeted interventions for specific subgroups, will provide further insight.

It is important to highlight other PFP subgroups that may have different responses to treatment. Adolescents with PFP tend to have lower success rates than adults, despite receiving similar exercise treatment and reporting similar treatment adherence\cite{19}. We can’t assume that applying the evidence from treatment studies on adults with PFP will achieve similar outcomes in adolescent patients. Structural changes in the PF joint may also influence prognosis and treatment response. Early signs of radiographic knee osteoarthritis in young to middle-aged adults with PFP (26 per cent, age 19-48 years\cite{5}; 40 per cent, age 26-50 years\cite{6}) should not be viewed as benign, as KL grade 1 is the strongest predictor for future definite knee OA\cite{20}. Other factors that may influence prognosis and treatment include psychological factors\cite{21,22}, centralisation sensitisation\cite{23}, and previous anterior cruciate ligament reconstruction\cite{24}. The challenge for practitioners is to identify contributing factors specific to the patient in front of them, and target management strategies towards these.

HOW CAN WE OPTIMISE OUTCOMES FOR ALL PEOPLE WITH PATELLOFEMORAL PAIN?

Considerable evidence shows that non-surgical interventions are effective for PFP. The best evidence from clinical trials supports a multimodal approach, combining exercise therapy, taping and manual therapy\cite{25}. Further evidence supports the use of adjunctive therapies such as foot orthoses and acupuncture\cite{25}. Due to the multifactorial nature of PFP, the pressing question is how we can apply this evidence to ensure the best patient outcomes.

1. TREATMENT PROGRAMS MUST BE TARGETED TO THE INDIVIDUAL

Although multimodal treatment has the best evidence for reducing PFP, one size does not fit all. Practitioners can tailor the multimodal program to the individual by identifying the main contributors to their PFP, and selecting interventions with known efficacy to address these. Using the subgroups above as an example, the ‘weak and tighter’ patient may benefit from strengthening exercises, stretching and manual therapy, while the ‘weak and pronated’ patient may respond more favourably to strengthening and foot...
orthoses\textsuperscript{18}. Patients with structural changes (x-ray, MRI) may need to start with low-load or non-weight bearing positions, before progressing to more functional weight bearing exercises. They may also benefit from adjunct pharmacological interventions (e.g. viscosupplementation\textsuperscript{26,27}). Given the chronic nature of PFP, it is important that practitioners regularly evaluate the success of the multimodal program, look for additional contributing factors, and adjust the program accordingly. Long-term management will be important for many PFP patients. Scheduling regular top-up appointments (e.g. at six-monthly intervals) will facilitate this.

2. TREATMENT SHOULD AIM TO REDUCE THE PAIN, EARLY AFTER ONSET

As the predominant symptom, pain is typically the driver for patients to seek treatment. But importantly, worse pain severity and longer pain duration are the most consistent predictors of poor long-term outcomes\textsuperscript{4,15}. From the outset, practitioners should aim to reduce pain, as early after symptom onset as possible. Reductions in pain will help gain the patient’s confidence in the practitioner and treatment program. This may facilitate greater adherence with treatment (e.g. exercise programs), and greater comfort during exercises. We know from experimental pain studies that both the presence of pain and fear of pain change activation of the quadriceps\textsuperscript{28}. This suggests that exercising with pain or anticipation of pain may not achieve optimal outcomes for muscle function.

Exercise therapy such as strengthening and functional movement retraining can take time to translate to noticeable pain relief. Multimodal programs can incorporate interventions aimed at reducing pain in conjunction with exercises addressing biomechanical factors. This may include patellar taping, foot orthoses, acupuncture or non-steroidal anti-inflammatory drugs\textsuperscript{25,29}, and should be selected based on assessment findings and individual response.

3. TREATMENT MUST TAKE A TEAM APPROACH

In sports medicine, the ‘team’ involves the multidisciplinary group of health professionals involved in managing the patient or athlete. This should be no different for patients with PFP. Specific disciplines involved will reflect individual patient presentation – for example, podiatry for foot orthoses, physiotherapy for exercise, taping and manual therapy, or psychology for management of impairments such as anxiety or pain catastrophizing.

But the most important member of the team is the patient. They must be educated about their knee condition with the most up-to-date evidence available, so that they can make informed contributions to clinical decisions. For a chronic, persistent condition, this is essential to optimise outcomes. Practitioners can access online, freely available, evidence-based resources to assist patient education\textsuperscript{30,31}. While the components of the multimodal program should target identified impairments, they must also fit the patient’s preferences and lifestyle. For example, an elite sprinter may easily incorporate a detailed exercise program into their training routine, but a recreational runner who works full-time and has young children may prefer a more passive intervention (e.g. foot orthoses) combined with two exercises performed in the gym three to four times a week. This too will facilitate adherence, which is vital given the dose-response relationship between exercise adherence and recovery\textsuperscript{32}.

CONCLUSION

Sports medicine practitioners should not underestimate the persistence of PFP and its burden across the lifespan. Treatment should aim to reduce pain severity, early after onset if possible, to improve prognosis. Identifying contributors to PFP within each individual will help guide selection of targeted treatments, with the patient an integral member of the sports medicine team. This approach will help to reduce frustration for both patients and practitioners, and optimise outcomes for all patients with PFP.
Sport health professionals are encouraged to join ASICS’ Professional Buyers Program. Anyone who joins will be eligible to receive 35 per cent off four pairs of shoes per year from the ASICS website, be able to experience shoes first hand and keep up to date with ASICS own medical newsletter and other literature from health professionals. To register, click here.

Reminder that Early Bird Registration will close on July 31, so make sure you register today to avoid the price increase!
SMA ONLINE STORE

Remember to visit the SMA online store. It has everything you need for first aid, including the full range of Victor Sports taping equipment. Click here to start shopping!

JOURNAL OF SCIENCE AND MEDICINE IN SPORT (VOLUME 19 ISSUE 6 JUNE 2016) HIGHLIGHTS

- Effectiveness of the eccentric exercise therapy in physically active adults with symptomatic shoulder impingement or lateral epicondylar tendinopathy. A systematic review. More.

- Examining differences in physical activity levels by employment status and/or job activity. More.

- Factors affecting exercise intensity in professional rugby league match-play. More.

To access, visit jsams.org

ALICE SPRINGS MASTERS GAMES – SMA MEDICAL CLINIC

SMA-NT are looking for sports medicine professionals to support the 4,000 athletes who will descend on Alice Springs for the Masters Games from October 8-15, 2016. The team will include Sports Doctors, Sports Physicians, Physiotherapists and Sports Trainers. This is a great opportunity for new and/or experienced sports trainers. For more information, click here.
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MELBOURNE CRICKET GROUND
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REGISTRATION FORM

Title	 First Name	 Last Name	 DOB	 Gender	 M/F
Profession/Position	 	 SMA	Membership	 No
Organisation/Discipline	 Group
Postal	 Address	 Suburb/Town	 	 State	 Post	Code	 Country
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Special	 Requirements	 -	Dietary,	 Physical	 etc

CONTACT DETAILS

REGISTRATION FEES

Sports Medicine Australia Membership
Join	 SMA	now	to	be	eligible	 for	one	of	the	ASMF	Fellows	 awards.	 Conference	 awards	 are	only	available	 to	SMA	members.	 Joining	 fee	of	$40	waived
for	Conference	delgates.	 SMA	membership	 is	open	 to	anyone	with	an	interest	 in	or
direct	involvement	 with	 sports	 medicine,	sports	science,	pysical
activity	promotion	or	sports	injury
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The	 FOC	student	 membership	 is	an	'online	 access'	membership	only.

Sub	Total	AUD$
SMA Membership
Full	Member	 -	$250	 Student	 Member	 -	$FOC
Conference Registration
Early	 Bird	Registration	 Late	 Registration
On	or	before	 On	 or	 after
31st	July	 2016	 1	 August	 2016
SMA	Member	 Registration	 -	Full	 $825	 $925
SMA	Member	 Registration	 -	Student	 ^			 $600	 $700
Non	Member	 Registration	 -	Full	 $1125	 $1225
Non	Member	 Registration	 -	Student	 $700	 $800

One	Day	Registration	 *	(Please	 tick	which	 day	you	would	 like	to	attend)
Wed 	12	October								Thurs	 13	October							Fri 	14	October								Sat 	15	October
Registration	 -	Full	or
Student			 $350	 $400

^	Student	 Registration	 Student	delgates	 must	a be	full
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time status.

*	One	day	registration	 includes	 entrance	 to	the
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Social Program

Costs	 are	 included	 in	 the	 registration	 fee	unless	 otherwise	 noted	 above. 	For
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please
 Tick	if	attending.
Delegate	 Ticket	 Additional	 Ticket	 # 	Required
Welcome	 Reception	 (Wed	12	October)	 	 $nil	 $80
Conference	 Dinner	 (Sat	15	October) 	 $nil	 $140

Enclosed	 is	my	cheque,	 payable	 to	ASMF
Electronic
Account	 Name:	 ASMF	LTD, BSB:	 082	967,
transfer,	 please	 quote
Account	 Number:	 02939	 7275
I	 wish	pay by

by												MasterCard								Visa
Card#				 												/ 												Expiry	 Date
Cardholder’s
Cardholder’s	 Signature

Please	 tick	if	you	do	NOT	wish	your	contact	details
to	be	made	available
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Trade
Exhibitors.

Photographs	 will	 be	 taken
during	 the	 course	 of	the	conference	 for	use	in	SMA
publications	 and	communications. If	 you
do	not	 wish	 for
your
photograph
to	be	included
as	part	 of	these
publications
or
communications	please	 tick	the	box.

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ACSMS Conference Secretariat, C/-Sports Medicine Australia, Sports House, 375 Albert Road, ALBERT PARK VIC 3206
P: +61 3 9674 8709  F: +61 3 9674 8799 E: acsms@sma.org.au
# Registration Form

## Contact Details

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## Registration Fees

### Sports Medicine Australia Membership

Join SMA now to be eligible for one of the ASMF Fellows awards. Conference awards are only available to SMA members. Joining fee of $40 waived for Conference delegates. SMA membership is open to anyone with an interest in or direct involvement with sports medicine, sports science, physical activity promotion or sports injury prevention and a minimum three year full time tertiary degree (or studying full time for a degree for student membership). The FOC student membership is an ‘online access’ membership only. For more information visit the membership page of the Sports Medicine Australia website.

### SMA Membership

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<th>Student Member</th>
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### Conference Registration

| Registration - Full or Student | $350 | $400 |

### One Day Registration *

- Wed 12 October
- Thurs 13 October
- Fri 14 October
- Sat 15 October

### Social Program

Costs are included in the registration fee unless otherwise noted above. For catering purposes please Tick if attending.

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### Additional Ticket

- MasterCard
- Visa

### Payment Options

- Please tick if you do NOT wish your contact details to be made available to Conference Trade Exhibitors.
- Photographs will be taken during the course of the conference for use in SMA publications and communications. If you do not wish for your photograph to be included as part of these publications or communications please tick the box.

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EXERCISE & WEIGHT GAIN IN PREGNANCY

THE FOLLOWING IS A REPUBLISHED EDITORIAL WHICH FEATURES IN THE JOURNAL OF SCIENCE AND MEDICINE IN SPORT (VOLUME 19, ISSUE 4, APRIL 2016) WRITTEN BY EDITOR-IN-CHIEF, GORDON S. WADDINGTON, PHD.

This month’s feature article by McDonald and co-workers examines the relationship between the amount of exercise undertaken and the impact of that exercise on gestational weight gain in a comprehensive systematic review. Their conclusions suggest that there are significant issues with compliance and adherence that need addressing in this area prior to being able to make clear recommendations regarding activity levels during this important period.

In the sport and exercise medicine section, De Vries and colleagues report a study examining the effects of wearing a patella strap on knee joint proprioception in individuals with patellar tendinopathy. Cullen’s group look at the long term effects of participation in the high pressure professional sport of horse racing focusing on the long term physiological and health effects of ex-jockeys. Creaby and colleagues compare the effectiveness of clinician versus accelerometry guided feedback.
on reducing tibial loads during running.

Cancela and co-workers report a study assessing the effect of long term aerobic exercise on institutionalised dementia patients.

In the sports and exercise medicine section two articles focus on issues relating to translating injury prevention guidelines into practice. Norcross' group, reports on factors that influence high school coaches uptake of injury prevention programs and Kemp and co-workers overview the factors influencing implementation of concussion guidelines in community level Australian Football and Rugby League. In the other reports in this section, Correia and colleagues describe the relationship between trunk muscle function, fatigue and low back pain in tennis players, and in a report of a large multi-centre study, Roemer and co-workers describe the association between anatomical location and extent of acute hamstring injury on MRI.

In the physical activity section Hooker and colleagues report a large cohort study of over 7,500 participants looking at differences in activity levels between white and black individuals in North America.

In this issue's sports and exercise science section, Ludyga and co-workers examine the effectiveness of high versus low cadence training on cortical activity in cyclist's brains and Gjon-Noguerno's group report on the effectiveness of a form of neuromuscular taping on foot posture and plantar pressures in recreational runners. In a report of work focusing on enhancing warm-ups during swimming transitions McGowan and colleagues compare the effectiveness of heated jackets and dry land based activation exercises.

This issue continues to provide an excellent range of articles of interest to researchers and clinicians in sport science and exercise medicine.

**ABOUT THE AUTHOR**

Gordon S. Waddington is the Editor-in-Chief of The Journal of Science and Medicine in Sport.
Medicine is taught in 17 Canadian universities. English programs are offered in Vancouver, Calgary, Edmonton, Saskatoon, Winnipeg, Sudbury, Hamilton, Toronto, Kingston, Ottawa, London, Halifax and St. John’s. French programs are offered in Quebec City, Montreal and Ottawa.

The structure of medical studies varies from one program to the next but the curriculum for each program must meet broadly established standards that are set nationally. The schools require four years of training to graduate with a medical degree. This usually involves three years of a mixture of academic and clinical training with the fourth year being mainly clinical. Following graduation, all medical students must pass their national licensing examinations to be able to continue with their residency training. Grantees can proceed to do two or three years of training in Family Medicine or do four to six years of training in a medical specialty such as orthopaedic surgery or psychiatry.

For a variety of reasons, not everyone who graduates from medical school is selected for postgraduate training. These programs all come with a number of nationally supervised examinations (oral, practical and written) which must be passed before one can practice independently. Once all of their academic and clinical training is completed, physicians must apply for a licence to practice medicine for every province in Canada in which they wish to practice. Most physicians only practice medicine in one province. In addition, in order to get paid, you must also apply for a billing number for each province that you practice in.

Sports medicine training is not offered through Canadian Medical Schools but it is possible to do elective training in sports medicine as part of your program. You can also concentrate your surgical training in orthopaedics which will provide some additional sports medicine exposure. Once a physician has...
completed their training in family medicine or a specific medical specialty, they can apply for one of the Primary Care Sport Medicine Fellowships that are offered through several Canadian Universities (PGY3). There are currently 12 of these fellowships offered every year and they range from one to two years in duration. All Fellowships are governed by a uniform curriculum established and agreed upon by the Fellowship Directors of each program. Once the fellowship is completed, the physician must pass a nationally run six-hour OSCE (Objective Structured Clinical Examination) to receive their Diploma in Sport Medicine. This examination is administered by the Canadian Academy of Sport and Exercise Medicine (CASEM) – the professional organisation for all sport medicine issues in Canada. Regardless of your level of training (neurosurgeon, paediatrician, psychiatrist, family physician, etc.), physicians must have successfully passed the Diploma in Sport Medicine examination to be recognised as a sport medicine physician in Canada.

For those physicians who have not undertaken a formal fellowship, there is a practice eligible route where practising physicians can apply to sit the exam as long as they meet the eligibility criteria (a minimum of two-years clinical practice, 50 hours of event coverage and attendance at a sport medicine conference). When these physicians feel they are adequately prepared, they can challenge the CASEM diploma exam which is offered once a year. On average, approximately 35 to 40 physicians a year pass their CASEM diploma exam.

Sport Medicine is not currently recognised as a medical specialty in Canada. CASEM is currently working hard to make this happen but the process is extremely complex and will take many years to achieve. Currently, only physicians with the CASEM diploma are allowed to refer to themselves as sport medicine physicians in Canada. In Ontario, the Ministry of Health will designate family doctors with the CASEM diploma as having a “Focused Family Practice in Sport Medicine” – which allows them to see other physician’s patients without a medical referral. CASEM is working on having “subspecialty” recognition for physicians who have either a Canadian College of Family Physicians certification or a Royal College specialty.

Currently only Canadian physicians with the diploma in sport medicine are considered for medical teams providing care for athletes competing at major sporting events such as the Canada Games, Commonwealth Games, Pan AM Games, FISU (University Games), Olympic Games, etc. CASEM also works to ensure that properly qualified physicians are available for national and international events that are held in Canada – for example the 2015 FIFA Women’s World Cup. CASEM offers a variety of educational opportunities including an annual symposium, Basic Team Doctor’s course, Advanced Team Doctor’s course, etc.

As of 20 May 2014 there were just over 500 Canadian physicians with the CASEM Diploma in Sport Medicine.

ABOUT THE AUTHOR

Dr Darrell Menard lives in Russell, Ontario where he and his wife have a focused family practice in sport medicine. In 2014 he retired after 40 years of service with the Canadian Army Forces and continues to work as the Surgeon General’s specialist advisor in sports medicine. He has provided medical coverage at a large number of national and international sporting events including the Military World Games, the Pan Am Games, the 2012 Olympic Games and he will be part of the medical staff for the Canadian Paralympic team competing at Rio 2016.

USEFUL ADDRESS:

Canadian Academy of Sport and Exercise Medicine – www.casem-acmse.org
My first foray into sports medicine occurred in 1990/1991 when I left my comfortable hospital-based position in Western Australia, turned my back on a paediatrics training position, and went to London to complete the Postgraduate Diploma in Sports Medicine at the Royal London Hospital in Whitechapel.

At the time, this was the only course in existence in the Western world for doctors to gain formal training in sports medicine. The course involved 12 months of full-time study with a group of about 16 students from all over the world. I thoroughly enjoyed the course and made some long-lasting professional and personal relationships which continue to this day.

I returned to Australia and was part of the first intake (1992) in the new ACSP (Australasian College of Sports Physicians) four-year specialist training program in sport and exercise medicine. I received much of my training from Prof Peter Fricker and Dr John Kellett. I secured my Fellowship of the ACSP in 1995 and established a solo specialist sports medicine practice in Canberra.

Over the next 15 years I thoroughly enjoyed private practice and worked with a range of sporting teams including the ACT Brumbies Super Rugby side, the Wallabies, the Canberra Raiders NRL side and the Australian Women’s Basketball team, the Opals. I had a brief interlude back in the UK in 2003 and 2004, as the inaugural Medical Director of a private sports medicine company, Pure Sports Medicine. During these two years in the UK, I was fortunate to have the opportunity to work with a variety of teams including Fulham FC, Manchester City FC, London Wasps Rugby and Bath Rugby. I returned to my Canberra private practice from 2005 with the practice growing to include five sports physicians and a sports physician registrar.

In 2012 I went to the London Olympics with the Opals. This was a wonderful experience, particularly as the Opals secured a bronze medal. I left London having had a wonderful Olympics experience but I had no expectation that I ever would be attending another.

Shortly after the London Olympics, the position of Chief Medical Officer of the AIS was advertised. I discussed this at...
length with family and friends before applying. I enjoyed private practice very much but was also attracted to the idea of having a significant career change at the age of 50. I commenced at the AIS in January 2013. Five days after commencing my AIS role, the Australian Crime Commission released its report outlining the role of organised crime in supplying peptides and pro-hormones to Australian athletes. The saga involving Essendon and Cronulla unfolded and I found myself up to my neck in integrity issues. While this development was unexpected, I found integrity work very stimulating and rewarding. In October 2013, the AIS was approached by the Australian Olympic Committee regarding my availability to undertake the role of Medical Director for Rio 2016.

The role of Medical Director involves overseeing the strategic medical planning, policy framework and staff appointments in preparation for Rio 2016. At Games time it will involve providing operational leadership of the multidisciplinary medical team. We have an excellent team in place for Medical HQ including doctors, physiotherapists, soft tissue therapists, psychologists, nutritionists, recovery specialists and performance analysts. The staff who have been appointed are highly skilled individuals. My role is certainly not to interfere or micromanage the delivery of clinical services but to support the Medical HQ staff and ensure that there are no obstacles or impediments to the staff getting on with their job.

The AIS and AOC have been planning for Rio 2016 since late 2013. For the first time ever, there has been a carefully coordinated partnership between the AIS and the AOC in progressing ‘Campaign Rio’, a meticulously structured strategic plan to ensure that the Australian Olympic Team (AOT) is the best planned and best prepared Olympic Team in Rio. We have full Campaign Rio meetings at least twice per year, bringing together leaders from each of the Olympic sports and key personnel from the AOC and the AIS, to map out a plan for delivering a successful Olympics for Australia. From my perspective, the key focus has been on safety and welfare of all members of the AOT, including athletes and officials. There will be 450 athletes and about 300 officials travelling to Rio, making the AOT one of the largest teams in Rio.

Rio 2016 is arguably the most medically challenging Olympics of the modern era. There are issues regarding water contamination in Guanabara Bay (sailing), Copacabana Beach (triathlon, open water swimming) and Lagoa Rodrigo de Freitas (rowing, sprint canoe). We have developed protocols for managing gastrointestinal illness and wound infections. Mosquito-borne infections have been front and centre of our planning since 2013. While malaria is not an issue in the regions around Rio itself, there has been careful planning in relation to Yellow Fever, Dengue Fever and Chikungunya Virus. In very late 2015/early 2016, we saw the emergence of information regarding Zika Virus with its potential link to birth deformities in unborn children and Guillain-Barre syndrome in adults. This has caused an enormous amount of concern which has required a great deal of research, careful thought and proactive advice for team members. The advice that we already had in place regarding mosquito-borne diseases remain completely appropriate for Zika Virus but obviously the potential threat of associated adverse effects on unborn children brought a new dimension to our preventative strategies. An extensive program of medical screening and vaccination for the whole of the AOT has been undertaken.

During the Olympics I will be delivering clinical services on a roster basis, alongside my medical colleagues in Medical HQ. As Medical Director, I will have the added responsibility of ensuring that any significant medical issues affecting the AOT are brought to the attention of the Chef de Mission, Kitty Chiller. I will be responsible for coordinating the movements of medical staff around Rio, as the competition venues are quite widely dispersed, relative to previous Olympics. Should any difficulties arise which interfere with the delivery of medical services in Rio, it will be my responsibility to ensure that such matters are promptly dealt with so that the delivery of medical services is uninterrupted and remains at the highest of standards at all times. While injuries are almost inevitable in some of the high contact and high velocity sports (Rugby, basketball, cycling etc.) perhaps the greatest medical danger to the AOT will be the threat of infectious disease (respiratory and gastrointestinal).

Medical HQ will operate between 7 AM and 10 PM each day during the Olympics. Medical staff will commence work about 10 days before the opening ceremony, so it will be a gruelling three and a half weeks. We have already discussed our ethos of friendly, professional service provision while ensuring that staff look out for each other to avoid burnout. We will be meticulous with rostering, to try and ensure that all of the staff in Medical HQ get a mental and physical break at regular intervals.

After the years of planning, I am looking forward to working alongside my exceptional colleagues in Medical HQ. While it will be the coaches and athletes who deliver competition success, the staff from all disciplines in Medical HQ have a critical role in ensuring that athletes and officials stay healthy and feel well supported throughout the Games. We have had several discussions about the culture that we want to cultivate in Medical HQ. We are all in agreement that the greatest reward we can have for our involvement in Rio 2016 will be the satisfaction of ensuring that all members of the AOT receive world-class medical support which is delivered in a friendly and helpful manner.

ABOUT THE AUTHOR

David Hughes will be the Chief Medical Officer of the Australian Olympic team at the Rio Olympics. He previously worked with the Australian Women’s Basketball Team, the Opals, at the 2012 Olympic Games in London.
ISOMETRICS FOR TENDON PAIN

PRACTICAL IMPLEMENTATION AND CONSIDERATIONS
Tendinopathy, pain, and dysfunction in the tendon can be difficult to treat. Traditionally eccentric exercise has been used in the rehabilitation of tendinopathy and has been shown to be superior to concentric only and passive treatments. However, there are many instances where the use of eccentric exercise is unhelpful or in fact detrimental; for example, the in-season athlete where adherence is poor and pain may increase. Even those who work with the non-athletic population know that adherence is a challenge as eccentric exercises are painful to complete.

Recent research has demonstrated a positive effect (reduced tendon pain, reduced motor inhibition and improved muscle performance) following isometric exercise in patellar tendinopathy supporting the pioneering clinical use by Jill Cook and Craig Purdam. However, this isn’t quads over fulcrum exercise. There are a number of key clinical concepts around the use of isometric exercise in tendinopathy. To date, research has been conducted in the patellar tendon (and a new study in shoulders about to be published by Dr Jeremy Lewis), however clinically we are using isometrics with other lower limb tendons. Key considerations before beginning isometrics include (1) ‘differential diagnosis’ (how to pick if the tendon is the source of symptoms) and (2) how to remove abusive loading.

Once a diagnosis of tendinopathy has been ascertained and isometrics are indicated, the critical clinical decisions are how we apply moderate-high isometric loading for analgesia, and how and when to progress.

Before going into details, there are some important considerations. Even though we talk about tendon pain it is important to remember that pain is an output of the brain. People report it being localised to their tendon and linked with loading, and this implies a nociceptive driver. When speaking to patients about their tendon, language is crucial and can shape outcomes.

For this reason, patients should be reassured about their tendon pathology. The tendon appears to adapt and compensate for a pathological area by increasing in size, so a thick tendon is a good tendon!

Furthermore, it is important to underline that the pathology does not need to change (nor is it likely to) for patients to achieve a good outcome. Hence, the ideal outcome is no pain and great function (Cook, 2016 #73; Drew, 2014 #74), independent of the appearance of their tendon. This reminds us that rehabilitation is the most important and efficacious treatment to achieve pain reduction and functional improvement.

**IS THE TENDON AN IMPORTANT DRIVER OF THE SYMPTOMS? THE DIFFERENTIAL DIAGNOSIS**

This is the first thing that should be clarified. The term tendinopathy is used to describe a clinical diagnosis of pain. People often have tendon imaging that can show tendon pathology, however this isn’t always painful. The term tendinitis, on the other hand, should be avoided because the primary event (i.e. what goes wrong with the tendon and the process of adaptation) appears to be driven by the tendon cell, and the role of inflammatory substances and signaling molecules is not understood. It does not appear to follow an inflammatory healing process in the same way wound healing does for example, and clinically we have all seen that rest, ice, and anti-inflammatories do not have the outcomes we would hope for. So picking whether a problem in the tendon is driving symptoms, is critical – differential diagnosis is pivotal.

Patellar tendinopathy (defined as pain and dysfunction in the tendon at the front of the knee) occurs in jumping athletes or those who change direction quickly. It has two hallmark features (1) pain remains very localised to the inferior pole (people can point to the pain with one finger and it doesn’t move or spread even with high loads) and (2) pain intensity is proportional to the amount of energy stored in the tendon (elasticity). A good way of remembering this is that for people with patellar tendinopathy, riding a bike is not painful (because bike riding does not use energy storage of the patellar tendon), but jumping is (because it does use that energy storage), even though both activities use quadriceps muscles. Thus, people with more
diffuse pain or pain with cycling, for example, in our clinical experience, are less likely to have a positive response to heavy isometrics.

Unfortunately, though, we currently have no gold standard for differentially diagnosing tendon or patellofemoral joint pain. Like most musculoskeletal conditions, tendon pathology or joint changes on imaging can be asymptomatic. Given the importance to establish the right contributors to pain and the best treatment path, both in tendon research and in the clinic, these two key features (localised and dose dependent pain with high patellar tendon load) are commonly reported guides.

Importantly, treatment that reduces pain can be empowering for patients and promote adherence. We have found differences in the motor responses (termed corticospinal excitability) between people with localised and people with more diffuse anterior knee pain. The grouping was based on clinical presentation and not on imaging results.

HOW TO REMOVE ABUSIVE LOADING

Once ascertained that the tendon is in fact driving nociceptive input, we can tackle the second problem: how to remove abusive loading. In the previous paragraph we explained that any load that requires the patellar tendon to store and release energy is painful, for example change of direction or jumping and landing. Therefore, athletes may need to reduce these types of activities. The pain response to tendon load 24 hours later is a good measure of a tendon’s ability to tolerate load. For example, if a person plays volleyball and the next day their tendon is no sorer, we would consider this load to be within their capacity. Whereas, if their pain spiked 24 hours later we would consider the load to have been greater than their tendon can tolerate. This concept is important to understand in regards to how we improve capacity – find the level of loading that a person can tolerate and make small incremental changes. Of course there is a bit more to it that cannot be covered here.

ISOMETRICS FOR PATELLAR TENDINOPATHY

Now that the diagnosis has been confirmed and the abusive loading has been removed, we can start to talk about the benefits of isometric exercise. First of all, another essential caveat is that complete rest is detrimental for tendons (and the rest of the kinetic chain). This means that, while removing abusive load, subjecting the tendon and patient to some positive loading is still required. Moreover, using load that reduces pain is great for empowering people. Jill Cook and Craig Purdam started using heavy isometrics for tendon pain a number of years ago with fantastic clinical results. Jill has also completed a number of podcasts on the topic.
Research has been undertaken to see what factors were important in using isometrics. The exercise was conducted on a leg extension machine (Figure Two). For tendons the exercise needed to be heavy (70 per cent of the participants’ maximal voluntary quadriceps contraction) and with a long time under tension. Many combinations were tested and it was found that 5 x 45 seconds (with two minutes rest for muscle and central recovery) was effective. Using brain imaging techniques, it was shown that isometrics actually reduced motor inhibition. This means that not only were people in less pain (a lot less pain), but they also had less motor inhibition and were 19 per cent stronger. An in-season trial was also completed showing that isometric loading can be used during this delicate period of athletes’ activity to reduce pain and allow continued participation (van Ark, 2015 #75). In the travelling athlete, where access to a leg extension machine is not possible, an isometric exercise using the Spanish squat belt (Figure One) is also effective.

This is obviously just the beginning of the process. Most people with tendinopathy will also require a strength program and gradual re-introduction of energy storage and release loading, all the while monitoring their pain 24 hours after loading to ensure they don’t exceed their capacity.

**CONCLUSION**

Isometric exercise can be used to reduce tendon pain – immediately and without decline in muscle performance when used as tested. The research is thus far confined to patellar tendinopathy but there is more to follow. It remains of vital importance to determine whether the tendon is an important contributor to symptoms (or at least determine whether the tendon is likely to respond positively to that approach) and to encourage people to load correctly to reduce their pain.

**ABOUT THE AUTHOR**

Ebonie Rio is a Post-doctoral researcher at La Trobe University in Melbourne.
A PERSON-CENTRED BIOPSYCHOSOCIAL APPROACH TO BACK PAIN
Low back pain (LBP) affects a large proportion of the general and athletic population; being considered a common reason for activity avoidance and retirement from sport. The story of a young Western Australian footballer troubled by persistent back pain is used to illustrate the impact of back pain in sport.

This footballer's back pain started with no specific incident, but at a time of reduced sleep and increased stress. His pain persisted over 12 months becoming a major impairment in his life. An MRI scan organised soon after the onset of symptoms reported disc degeneration of the lower lumbar spine (L5/S1), with no evidence of a disc prolapse or neural compromise. The advice given by a health care practitioner was to avoid bending and lifting and to follow a program that aimed at strengthening the core muscles to protect the back. Despite compliance with the program for over three months the athlete had minimal improvement, presented increased levels of distress, became avoidant of physical activities, had unhelpful beliefs about his back (“my back is weak and damaged”, “bending will cause more damage”) and the possibility of playing football again and stopped training.

This case is a common example of an athlete that struggles to achieve their goals while living with persistent back pain. Historically, the rehabilitation of athletic populations has been directed at targeting biomechanical faults with consideration of pathology. The search for an accurate imaging diagnosis, guiding medical interventions (spinal injections, medication and surgical procedures) and physical approaches that aim to reduce biomechanical impairments such as core stability, have been a major focus of biomedical practice. However, there is evidence that biomedical approaches have led to a significant increase in healthcare costs and an increase in pain-related disability. The limited integration of a biopsychosocial understanding that directs clinical practice combined with the lack of individualised care are two factors considered to underpin this.
A PERSON-CENTRED BIOPSYCHOSOCIAL APPROACH TO BACK PAIN IN SPORT

BIOPSYCHOSOCIAL FACTORS RELATED TO PAIN

The understanding of the mechanisms by which pain can occur have evolved over recent years. While originally pain was understood solely as an alarm system to indicate the amount of tissue damage, contemporary knowledge defines pain more broadly as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (as defined by the International Society for the Study of Pain - IASP). Strong evidence supporting this definition indicates the nature of pain is multifactorial and may include interactions between patho-anatomical, physical (training load, lifestyle, biomechanics, movement patterns, physical conditioning) and non-physical (beliefs, emotions, lifestyle, social stressors, culture) factors. The complex interplay of these factors in some cases, can lead to a negative cycle that perpetuates pain and disability.

Patho-anatomical factors

Specific pathologies account for 10-15 per cent of the population with LBP. In the sporting population the most common are: stress fractures, spondylolysis, and disc prolapse with radiculopathy. Serious pathologies (e.g. fractures, tumours, infections) account for one to two per cent of people with LBP. The large majority will present pain in the absence of pathology (non-specific LBP). Radiological findings such as disc bulges, protrusions, annular tears and facet joint arthropathies are commonly seen in asymptomatic individuals and not well correlated with pain and disability (Jarvik et al 2005); therefore, when present, need to be considered within the context of the athlete's presentation and communicated skilfully.

Physical factors

Certain sports that perform sustained (e.g. cycling) or repetitive loading of the spine, especially when coupled with rotation (e.g. sweep rowing) or lateral bending (e.g. gymnastics and tennis), can be associated with an increased risk for LBP. Factors such as cumulative training load and sport-specific technique have been linked to higher incidence of LBP in rowing. Similarly, lifestyle factors related to physical activity (under and over activity) can influence pain sensitivity and disability.

Deficits in back muscle endurance have also been linked to increased risk of LBP in sports involving repetitive bending (i.e. rowing), and improvements in back and leg muscle endurance have reduced the risk of LBP.

Non-physical factors

Beliefs about pain can have a strong impact on an individual’s response to pain, and are influenced by a person's past experiences, contextual factors, culture, and information provided by treating therapists. LBP is commonly seen as “easy to harm and hard to heal”. Negative beliefs have been associated with increased pain sensitivity and together with fear of movement are highly predictive of disability. Emotional factors such as high levels of stress, low mood and anxiety influence pain, disability and distress, and have been described as predictors of injury in athletes.

Lifestyle factors such as sleep deficits, abdominal obesity and alcohol consumption can affect spinal tissue sensitivity. Social factors such as demands of the sport, expectations from coaches, team mates and fans, family stresses, and cultural factors can influence stress load, pain coping and vulnerability.

A PERSON-CENTRED APPROACH TO THE MANAGEMENT OF LBP IN SPORT

In light of the limitations of the biomedical approach, Cognitive Functional Therapy (CFT) emerged as an integrated person-centred, goal orientated behavioural approach for the management of LBP once serious pathology has been ruled out. CFT uses a clinical reasoning framework to consider the multiple factors associated with the LBP disorder. This enables the identification of the key modifiable risk factors for the athlete and subsequent development of an individualised management plan.

CFT aims to provide biopsychosocial understanding of pain, promote functional re-training while confronting mal-adaptive cognitions and behaviours in avoided and/or provocative activities to return people to desired functional goals. A thorough interview that is reflective and motivational in nature is followed by a targeted physical examination to determine the key drivers of the athlete's disorder; assisting the athlete to make sense of his pain and developing a targeted rehabilitation program.

Managing the young footballer

Some of the key aspects for the management of the young footballer was to understand the beliefs underlying his behaviour. He believed that pain was a sign of damage, and that avoiding bending forward and tensing his muscles while moving would protect his back from further damage (pointed to him on the MRI). These beliefs were challenged not only through de-threatening his radiology with sensible and evidence-based information, but also through behavioural learning. Behavioural experiments during the performance of valued activities (bending to pick the footy, lifting weights) showed that his pain could be controlled by changing his behavioural response (breathing and relaxing his abdominal muscles while bending forward and lifting through his legs). Based on that, a targeted functional re-training program was designed to restore his confidence in his back, conditioning of his legs and physical capacity to return gradually to valued activities and sports training.

The efficacy of CFT has been tested in the athletic and non-athletic population with non-specific LBP, showing promising results. However, this approach is still novel and further testing is under way.
Beliefs about pain can have a strong impact on an individual’s response to pain, and are influenced by a person’s past experiences, contextual factors, culture, and information provided by treating therapists.

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**Dr Leo Ng** is a musculoskeletal physiotherapist and a lecturer at the School of Physiotherapy and Exercise Science at Curtin University. He completed his PhD on the use of Cognitive Functional Therapy to manage low back pain in rowers.

For future information on this approach and patient stories refer to: [www.pain-ed.com](http://www.pain-ed.com)
THE FORECAST IS RAIN, OR IS IT?

FEATURE TO SCREEN OR NOT TO SCREEN?
ASSOCIATE LECTURER AND ACCREDITED EXERCISE PHYSIOLOGIST AT THE UNIVERSITY OF NEWCASTLE, ADRIAN SCHULTZ AND SENIOR SPORT PHYSIOTHERAPIST AT THE AUSTRALIAN INSTITUTE OF SPORT, MICHAEL DREW POSE THE QUESTION OF HOW VALUABLE PRE-SEASON SCREENING IS IN SPORT.

The intent of pre-seasonal musculoskeletal (MSK) screening is to collect data in order to predict an outcome, and is most often applied in the context of seasonal injury prevention. This is much like looking at meteorological data in order to determine future weather patterns. As anyone who has lived in Melbourne will attest, this is a far from perfect science and is subject to error. So, just how valuable then is pre-season screening in sport?

Firstly, we must understand the different types of screening and their associated goals. When screening to prevent pathology, three main screening types exist: primary, secondary and tertiary. Parallel with this is prevention (of all injuries) by controlling certain risk factors which are universal, selective and indicated. All of these are summarised in the table overleaf.
When it comes to screening there are two philosophical camps; in one camp critics cite limited sensitivity and specificity of the testing data, consequent relative time and resource commitments, and confounding effects relating to the time period between screening and a resulting injury or event, as reasons not to screen. In the other camp, proponents cite the early identification of injury risk factors and the use of screening data as a baseline measure of health for usual participation are often poorly correlated. Whether you are for or against pre-season screening there are two philosophical camps; in one camp critics cite limited sensitivity and specificity of the testing data, consequent relative time and resource commitments, and confounding effects relating to the time period between screening and a resulting injury or event, as reasons not to screen. In the other camp, proponents cite the early identification of injury risk factors and the use of screening data as a baseline measure of health for usual care and intervention planning as reasons to screen. However, we advocate that both perspectives represent a linear view on injury prevention as task and not a dynamic process.

<table>
<thead>
<tr>
<th>Prevention type</th>
<th>Pathology</th>
<th>Risk factor control</th>
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<tbody>
<tr>
<td></td>
<td>Primary</td>
<td>Universal</td>
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<tr>
<td></td>
<td>Secondary</td>
<td>Selective</td>
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<td></td>
<td>Tertiary</td>
<td>Indicated</td>
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In an uninjured athlete, screen for risk factors and remove them or prevent them from developing.

In an uninjured athlete, screen for early warning signs of injury, intervene early to stop them progressing to ‘full’ injury.

In an injured athlete, screen for potential risk factors of potential complications of the injury.

Population based measures addressing all participants in a sport. Elimination of generic risks of participation.

Measures given to an uninjured group defined by their risk modifiers (age, sex, sociodemographic).

Measures given to an uninjured individual defined by their personal factors which increase their risk.

In an Olympic year in a group of high performing Olympic class sailors. Only single-leg decline squat (SLDS) performance (mimicking a movement pattern not specific to sailing per se) was predictive of seasonal all-injury status, inclusive of upper limb injury. Common sense here says that this is probably an overcall (indicative of a Type I error). However, poor SLDS test performance, through identifying 100 per cent of the athletes who were to sustain an injury during the season, also identified 43 per cent of the athletes who would not go on to sustain an injury. Do we accept this level of association as sufficient proof of the practical usefulness of this test screening data or should we strive for greater predictive accuracy from the data we are collecting?

Some would argue that some non-specificity is a permissible trade off, and that a degree of over-servicing of identified ‘at-risk’ athletes is acceptable. In our experience this non-specificity (or oversensitivity created by large numbers of tests) clouds our judgement over time and at the very least results in significant inefficiencies in the resulting injury prevention programming. Much like when we watch the weather forecast, we have come to accept that there is a degree of variability in the forecast that sometimes means our expectations are just not met. A degree of resignation would of course be a normal human response to our perceived lack of control and/or limits to our current level of understanding. Perhaps we gain some comfort too from the fact that by continuing to screen in a ‘traditional’ manner at the very least this represents a level of medico-legal due diligence. We need to be mindful however of the fact that injury prevention, like weather prediction, is a ongoing process, not a task completed once a year.

Though some would say this perspective paints a somewhat cynical picture, yet as practitioners we should rather view this as an opportunity, both in terms of how we approach research on the topic, and
also how we apply research findings to best ecological effect. With a view to furthering our current understanding. The challenge before us is to take a view that is broader than a battery of tests administered in a single month prior to commencement of a competitive season and then waiting and watching to see what happens. We need to work continuously with athletes, coaches and support staff to increase ecological validity of our research findings (and thereby reduce injury incidence).

Prospective injury surveillance is the cornerstone of all prevention. A detailed history of injury should be maintained, as this will be useful in ‘selective and targeted’ prevention programming. The advent of new portable wireless sensor technologies, which are gaining in popularity and becoming more widely adopted, could aid in this process. These technologies may provide additional reliable and valid data points that go further than simply defining performance on a given test with a simple discrete pass or fail rating based on visual inspection or a continuum of data points that range from low to high scores, as is the case with a number of traditional screening tests. The granularity and ability to be quickly applied in the field lend these technologies to secondary prevention and/or indicated prevention programming, which result in cases where increased injury risk is identified.

Taken together with other athlete data, this information may further improve the predictive accuracy of any collected screening data, and may help to refine our understanding of the interaction of all relevant injury risk factors, allowing for more targeted injury prevention strategies. We are following this model in our own low back pain research in Olympic class sailors, and though time and resource intensive, a clearer picture of injury risk is starting to emerge. The same is true in research in other sports, with research in cricket fast bowling injury prevention a particularly good example. Of course, this is an idealised viewpoint. Perhaps the first step is realising the need for change, and then, secondly, establishing a commitment to resourcing the necessary changes.

A recent publication by Roald Bahr in the British Journal of Sports Medicine lends strong support to the idea that greater rigor is needed in sports injury research that aims to derive predictive value from routine MSK screening. Bahr advocates that in addition to establishing a strong association between MSK screening data and injury risk (Step 1), appropriate statistical tools need to be rigorously and contextually applied in a particular sporting population (Step 2) in order to determine the true value of a particular test. Intervention programs targeting identified ‘high risk’ athletes should then be evaluated in controlled studies and proven to be more beneficial than if the intervention program were given to all athletes (Step 3).

If the purpose of MSK screening is to routinely flag athletes who may be at increased risk of injury, we may need further discussion regarding the many ways of quantifying risk and also determine levels of ‘acceptable risk’ which should be a tripartite conversation between athlete, coach and relevant staff. Can we afford to simply stop screening, or are we obliged to change and redirect our current path?

Irrespective of whether you pay attention to the weather forecast or not, or are for or against routine MSK screening, weather patterns will continue to fluctuate and athletes will continue to get injured. Given the identified challenges, how we choose to respond in all likelihood will determine how wet or how dry we get, and how successful or unsuccessful our athletes will be.

ABOUT THE AUTHORS

Adrian Schultz is an Associate Lecturer, PhD candidate and Accredited Exercise Physiologist at The University of Newcastle.

Michael Drew is a Senior Sports Physiotherapist at the Australian Institute of Sport and an adjunct researcher at the Australian Collaboration for Research into Injury in Sport and its Prevention (ACRISP). ACRISP is one of the International Research Centres for Prevention of Injury and Protection of Athlete Health supported by the International Olympic Committee (IOC).
Shin pain is a common injury experienced in many running based sports including basketball, netball and football.

It is characterised by pain in and around the tibia in the lower leg and usually occurs as a result of a sudden increase in the frequency, duration and/or intensity of activity.

**RISK**

- Abnormal biomechanics – overpronation, tibial malalignment e.g. bowed legs.
- Training methods – inappropriate increases in the intensity, duration or frequency of exercise.
- Training surfaces – running on hard surfaces or uneven ground.
- Footwear – wearing inappropriate footwear for the activity or worn out shoes.
- Poor flexibility, muscle imbalance or inadequate strength – affecting muscles of the lower limb.

**SIGNS AND SYMPTOMS**

There are three main types of shin pain. These are:

**Medial Tibial Stress Syndrome**

Cause: A change in the amount or type of activity may lead to the muscles of the lower leg pulling on the lining of the tibia.

Area of pain: Pain along the front and/or inside of the tibia. It may be painful to touch and vary in intensity. Pain will be present as activity begins but is likely to decrease as you warm up. Pain is generally worse in the morning and after exercise.

**Stress Fracture**

Cause: This fracture is an overuse injury that occurs as a result of repeated stress to the bone causing a small fracture.

Area of pain: Localised to an area along the front of the tibia, but usually near the middle. It is normally constant pain that increases with exercise. The pain develops suddenly and is sharp in nature. It may be too painful to exercise.

**Compartment Syndrome**

Cause: In the lower leg there are a number of muscle compartments, which are muscles contained within a lining called a fascial sheath. As a result of overuse/inflammation or a direct impact injury, these muscle compartments may become swollen and painful.

Area of pain: Pain along the front and/or inside of the tibia in the muscles at the front of the lower leg. Pain usually increases as activity begins and decreases when it stops. The muscles affected may feel weak or numb. The sensation of pins and needles may also be a feature, and this requires urgent medical attention.

**IMMEDIATE MANAGEMENT**

The immediate treatment of any soft tissue injury consists of the RICER protocol (rest, ice, compression, elevation and referral). RICE protocol should be followed for 48-72 hours. The aim is to reduce the bleeding and damage within the joint.

The No HARM protocol should also be applied – no heat, no alcohol, no running or activity, and no massage. This will ensure decreased swelling and bleeding in the injured area.

Depending on the diagnosis from a sports medicine professional, management may include:

- Pain-relieving techniques.
- Correction of biomechanical issues.
- Specific stretches for flexibility.
- A specific strength and muscle conditioning program.

**REHABILITATION AND RETURN TO PLAY**

Return to sport or activity should be overseen by a sports medicine professional. They will ensure you have sufficiently recovered and can complete the activities necessary for sport or activity with no pain.

To keep fit while experiencing shin pain, participating in low impact activities such as swimming, cycling and deep-water running. Make sure the shoes you use for running fit properly, have adequate padding and are appropriate for your foot type and activity level.

**PREVENTION**

- Undertaking training prior to competition to ensure readiness to play.
- Undertaking fitness programs to develop strength, balance, coordination and flexibility.
- Gradually increasing the intensity and duration of training.
- Always warming up, stretching and cooling down.
- Wearing appropriate footwear for your foot type and activity.
- Replacing worn out footwear.
- Considering biomechanical screening to identify problems before they arise.
- Allowing adequate recovery time between workouts or training sessions.
• Checking the sporting environment for hazards.
• Drinking water before, during and after play.

Like most overuse injuries, shin pain may develop gradually over a period of time. Often the early signs are ignored and those experiencing the symptoms continue the activities causing their problem. Early assessment and treatment of shin pain can make a significant difference and can prevent the problem before it becomes severe.

Want to learn more on shin pain, injury prevention and management? Sports Medicine Australia runs a range of courses. For the complete calendar of courses, visit sma.org.au.
I was born in Orange in country NSW but at an early age my family moved to Sydney’s western suburbs. At the local school, involvement in sport was considered just as important, if not more important, than academic excellence. Thus having competed in athletics, cricket, boxing and rugby league, a life-long passion for sport was fostered.

Having graduated in Medicine from Sydney University in 1967 and after an internship and a year as a surgical registrar, I eventually moved into general practice, despite toying with the idea of being a general surgeon. In the early 1970’s whilst a GP in Belmore I was approached by the then CEO of the Canterbury Bulldogs rugby league team, Peter Moore, to look after the team. Working with the team it soon became apparent to me that there were considerable gaps in my knowledge and few accepted protocols within the sport as to the comprehensive management of sporting injuries and specific athletic training and dietary protocols, thus prompting me to seek out and join the NSW branch of the Australian Sports Medicine Federation (the precursor to SMA). Encouraged by Dr Bill Webb, soon thereafter I served in various roles on the NSW Branch Council including Secretary and as a State Delegate to the National Council.

For me, one of the most worrisome aspects of the then immediate on-field assessment and management of player injuries was that the majority of on-field trainers, whilst enthusiastic, long serving and dedicated servants of the Club, had little or no training in sports first aid. A dedicated group of SMA members including Perc Russo, David Collinson, Stuart Watson and Peter Malouf took up the offer of the Sports Master at Sydney’s GPS Riverview College, to spend a weekend devising a curriculum for a Sports Trainers course in order to offer the opportunity to Sports Trainers at community and professional levels to extend their knowledge and be recognised and accredited in their roles. Emerging eventually as the National Sports Trainings Scheme, this scheme, in my view, is one of the most important initiatives embraced by SMA.

The time of service on the National Council included roles as Chair of the Constitution Committee and Chair of the Children in Sport Committee. The Constitution I introduced had the effect of binding together with common aims, objectives and protocols, the various State bodies which prior to this were essentially seen as independent entities. Recently the SMA Constitution has been...
A MOMENT WITH HUGH

What was your career highlight?

My career highlight was being awarded a Member of the Order of Australia for my work in Sports Medicine and Rugby League.

What is your advice to those starting out in their career?

Those interested in a career in sports medicine, whatever their field of expertise, can do no better than seek out mentors via the multidisciplinary organisations within SMA. The enthusiasm inspired by association with enthusiasts of sports medicine ranging from those such as past SMA CEO Matt Reid, to leaders in their field, past and present, such as Fred Better, Ken Fitch, Brian Sando, Percy Russo, Tony Parker, Wes Battams, Grace Bryant and Jenni Saunders were an inspiration for advancement when choosing a career in Sports Medicine.

Do you have any career regrets?

Absolutely none – it has been a most rewarding experience.

Some of the other highlights of my time spent working in SMA included, representing SMA as a consultant on the National Health and Medical Research Council publication on Head and Neck Injuries in Sport, being part of the introduction of policy statements on Children in Sport and Blood-borne Infectious Diseases guidelines and working with SMA-NSW, the NSW Department of Sport & Recreation and Dr Peter Malouf to record a video on the management of Neck Injuries (Neck Safe Program) which was distributed to all schools in NSW.

However the highlight during my time at SMA was seeing the organisation expand into a broad multidisciplinary body promoting shared knowledge between Sports Scientists, Physiotherapists, Dietitians, Doctors and Sports Trainers.

The knowledge and experience gained via involvement with SMA are inextricably linked with one’s career outside the organisation. Indeed life would have almost certainly taken a different course without this involvement. Friendship, association and collaboration with the late Dr. Perc Russo saw the introduction of the Graduate Diploma of Sports Science at Sydney University’s Cumberland College. Doctors (SMA Members) undertaking this Diploma got together in founding the Australian College of Sports Physicians.

Outside of SMA, I enjoyed a long and enjoyable career as part of the NRL and rugby league in general and was part of a number of key changes including, the introduction of a drug testing policy in Rugby League, making it the first professional sport in the country to do so. During my 30-years with the Bulldogs, the team competed in 11 Grand Finals and won six premierships. Outside of Canterbury, I acted as Team Physician to the Country Rugby League team, New South Wales, the Indigenous All Stars and the Australian Kangaroos and was also appointed as Chief Medical Officer to Super League and subsequently the NRL.

I also enjoyed the unforgettable experience of being Medical Director of the Pacific Nations Rugby League Cup which was held in Port Moresby, Papua New Guinea and was also appointed as a member of the Australian Sports Drug Medical Advisory Committee (ASDMAC).
Sports Dietitians Australia (SDA)

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Sports Physiotherapy Australia (SPA)

Sports Physiotherapy Australia are currently developing a new career pathway which should see a better array of sports related courses offered by the APA. We continue on the advocacy front to enable Sports Physiotherapists access to prescribing rights, imaging rebates and direct referral to Specialists, Sports Physicians in our case.
JULY

2 – Level 1 ASCA Strength and Conditioning Coaching Course, Townsville, QLD
5 – Assessment and Management of the “Rotator Cuff” Master Class, Nedlands, WA
7 – Assessment and Management of the “Rotator Cuff” Master Class, Kent Town, SA
8–10 – Sports Physiotherapy Level 2, Silverwater, NSW
10 – Assessment and Management of the “Rotator Cuff” Master Class, Eight Mile Plains, QLD
11 – Shoulder Surgery & the Importance of Targeted Rehabilitation, Kent Town, SA
12 – Assessment and Management of the “Rotator Cuff” Master Class, Camberwell, VIC
13 – Assessment and Management of the “Rotator Cuff” Master Class, Silverwater, NSW
22–23 – Lower Limb Tendinopathy, Camberwell, VIC
23–24 – The Sporting Hip, Eight Mile Plains, QLD
27 – Radiology Update, Moore Park, NSW

AUGUST

6 – Level 1 ASCA Strength and Conditioning Coaching Course, Kidman Park, SA
12–13 – Lower Limb Tendinopathy, Kent Town, SA
13 – Level 1 ASCA Strength and Conditioning Coaching Course, Sydney Olympic Park, NSW
13–14 – Optimising Running Mechanics, Fitzroy, VIC
19–20 – Lower Limb Tendinopathy, St Leonards, NSW
20–21 – Sports Physiotherapy, St Lucia, QLD

Please check the APA website for further information and registration.
http://www.physiotherapy.asn.au/