Commonwealth Games Diary
BASES Conference Highlights
Exercises to Avoid
Seminal Papers

BASES Conference 2011 • University of Essex • 6 - 8 September • Abstract deadline 27 April
www.bases.org.uk/BASES-Annual-Conference
2011 BASES Annual Student Conference
12-13 April 2011

Integrations and Innovations: An Interdisciplinary Approach to Sport and Exercise Science

A conference reflecting the diverse nature of disciplines within sport and exercise science, highlighting the integrated and interdisciplinary approach to research and applied practice.

Key features of the conference include:

- Keynote and workshop presentations by speakers engaged in sport and exercise science at a level where several disciplines are integrated to optimise health or performance
- Emphasis of the essential transfer of academic study into the ‘real world’
- A series of interactive workshops aimed at enhancing key, vocationally relevant skills
- A Careers Fair enabling delegates to meet and discuss with employers about vocational opportunities during and beyond academic study

www.bases.org.uk/student-conference
What do sport and exercise scientists do? Or maybe a more appropriate question would be: What do people with a sport and exercise science degree do? Both of these questions have been ponderings for me recently, brought about by several circumstances occurring at the same time.

Earlier this year, I carried out a review for a University facility for which a brief view of the UCAS website showed that, at undergraduate level alone, there are circa 1,600 named degree courses in “sport” being provided by over 150 Universities and colleges. Of these, there are 666 named degree courses in sport science at 99 universities and colleges. From this profusion of courses, BASES has 1,175 student members – less than one per sport course.

An invitation back to Chelsea School at Brighton University earlier this year reminded me that I am in a small minority of alumni from my year group (albeit some 26 years ago) who still has any involvement in the profession.

A recent request on an internet forum from someone thinking about doing a sport science degree after their A levels, is met with replies of “don’t do it, there are no jobs out there”. Dr Steve Ingham (who writes in this issue on what physiologists do) estimated that the physiology positions available last year in the EIS equated to 0.03% of the number of sport and exercise graduates (15,000 per year).

All of this combined illustrates that, while it can lead into a career in the profession, completing a sport and exercise science degree is also something that many people do before changing career track. What of the future then? We are currently being raised for higher degree costs and the implications of the recent government spending review (q.v., Prof Andy Smith’s article on page 25). If sport and exercise science becomes regulated by the Health Professions Council, the requirements for courses linked to professional recognition will most likely increase. In 10 years’ time there will still be over 150 institutions offering sport and exercise science degrees! I doubt it; certainly not degrees that have a focus on subsequent application of what has been taught and learnt. Rather, I foresee fewer degrees on offer, but a greater proportion of students who truly want to be a sport and exercise scientist.

This is by no means a bad thing; it will help drive greater standing, understanding and recognition for what a sport and exercise scientist does. That, for the profession and for BASES, has to be a good thing.

This editorial brings to an end my short tenure as Editor of The SES as the BASES Board has decided to remove the position of a member editor to save money and for the role to be carried out by employees.

Dr Sarah Rowell FBASES
Editor
saz@srowell.demon.co.uk
BASES Early Career Researcher Award Winners
- Dr David Fletcher, Loughborough University
- Dr Glynn Howatson, Northumbria University
- Dr Anni Vanhatalo, University of Exeter

BASES International Conference Grant Winners
- Dr Brendan Copley, University of Wales Institute, Cardiff
- Dr Tim Holder, St Mary’s University College
- Dr Dave Smith, Manchester Metropolitan University

BASES Fellowship
- Prof Celia Brackenridge, Brunel University
- Dr John Buckley, University of Chester
- Prof David Collins, Self-employed
- Prof Carlton Cooke, Leeds Metropolitan University
- Dr Jason Gill, University of Glasgow
- Prof Michael Gleeson, Loughborough University
- Dr Richard Godfrey, Brunel University
- Dr Brian Hemmings, Self-employed
- Dr Costas Karageorghis, Brunel University
- Prof Andrew Lane, University of Wolverhampton
- Prof Craig Mahoney, The Higher Education Academy
- Prof Alison McConnell, Brunel University
- Prof Marie Murphy, University of Ulster
- Dr Richard Tong, University of Wales Institute, Cardiff
- Dr Ken van Someren, English Institute of Sport
- Prof Greg Whyte, Liverpool John Moores University/Self-employed

Awards and Grants

BASES Masters Dissertation of the Year Awards
Established in 2010, these awards are given annually for outstanding sport and/or exercise science dissertations made by BASES members who are UK masters students this calendar year (1 January to 31 December). ‘Masters’ includes MSc, MA, MPhil and MRes in a sport and/or exercise science related area. Each of the two prizes is an expenses-paid (up to £250 on proof of receipts) oral presentation at the BASES Annual Conference.

Number Offered: Two each year
Target BASES Membership Categories: Student and Graduate
Application Closing Date: 30 December

Professor Tom Reilly Doctoral Dissertation of the Year Award
This award is given annually for an outstanding doctoral dissertation made in the area of sport and/or exercise science by a BASES member. This award was established in 2010 through the generosity of Routledge and is named after Prof Tom Reilly (1941–2009) who was an Honorary Fellow of BASES. The prize is £500.

Number Offered: One each year
Target BASES Membership Category: Student and Graduate
Application Closing Date: 31 January
Visit www.bases.org.uk/Professor-Tom-Reilly-Doctoral-Dissertation-of-the-Year-Award

2010 BASES Annual Conference Award Winners

Award
- Elsevier Student Oral Presentation Award
- Human Kinetics Student Poster Presentation Award
- Sportresse Sport Science Award
- Sportresse Exercise Science Award
- Routledge – Taylor & Francis Recently Qualified Researcher Award
- University of Glasgow Poster Presentation Award
- BASES Student Oral Presentation Award

Winner
- Julia Zakrzewski, Loughborough University
- Natalie Goldring, Canterbury Christ Church University
- Dr Sally Akeley, University of Derby
- Dr Emma Ross, University of Brighton
- Dr Anni Vanhatalo, University of Exeter
- Dr Francesca Burton, University of Plymouth
- Stephen Bailey, University of Exeter

Memorial Fund for First Ever Professor of Sport Science in UK
Colleagues at Liverpool John Moores University have established a memorial fund to recognise the pioneering contribution made by Prof Tom Reilly to sport and exercise science. Tom sadly passed away in the summer of 2009, but the ripples of influence from Tom’s career are still very much apparent.

The intention of the Tom Reilly Memorial Fund is to continue and enhance Tom’s substantial legacy. Perhaps his most profound legacy has been his mentoring of staff and postgraduate students who now exert significant influence across all walks of society, but particularly within sport and sport science. In this way, over the years, he has been responsible for germinating the seeds of our young discipline. Therefore, in recognition of Tom’s tireless and unflagging support for young researchers, it is hoped that this fund will raise £150,000 to support PhD studentships.

Liverpool John Moores University are inviting former colleagues, professional associates, students, friends and those who simply remember Tom for being the loyal and compassionate man that he was, a humorous individual with a lifetime love of football and a twinkle in his eye, to make a contribution to the fund.

To make a donation, visit www.ljmu.ac.uk/daro and click on ‘Ways to Give’. Alternatively, please call 0151 2313891.
Accreditation and Re-Accreditation Applications as a Sport and Exercise Scientist

Re-Accreditation
Dr Jamie Barker, Staffordshire University
Joanne Batey, University College Winchester
Dr Jacki Dabinett, Roehampton University
Dr Misia Gervis, Brunel University
Dr Glyn Howatson, Northumbria University
Dr Marc Jones, Staffordshire University
Paul Jones, University of Salford
Dr Zoe Knowles, Liverpool John Moores University
Jane Lomax, University of Chichester
James Lowther, Kingston University
Dr Roger Rambottom, Oxford Brookes University
Alexandra Taylor, University of Birmingham
Dr Mark Uphill, Canterbury Christ Church University
Phil Watkins, University of Derby
Helen Weavers, University of Dundee
Carl Wells, Sheffield Hallam University
Dr Tony Westbury, Edinburgh Napier University
Dr Matthew Weston, Teesside University
Stacy Winter, St Mary’s University College

Accreditation
Elena Avraam.
Melissa Coyle, University College of St Mark and St John, Plymouth
Dr Melissa Day, University of Chichester
Romain Denis, University College Dublin
Nick Grimshaw, NIH
Joan Henretty, Scottish Institute of Sport
Dr Andrew Hill, York St John University
Christine Johnston, Mouchel Group
Dr Martin Jones, University of Gloucestershire
Jonathan Leeder, English Institute of Sport
Alex McGregor, University of Birmingham
Dr Martyn Morris, Oxford Brookes University
Peter Olusoga, Sheffield Hallam University
John Perry, Leeds Trinity University College
Helen Ryan, University of Winchester
Jonathan Smith, Newman University College
Dr Garry Tew, Sheffield Hallam University
Dr Richard Tong, University of Wales Institute, Cardiff
Lauren Whittaker, British Swimming

2011 BASES Annual Student Conference
‘Innovations and Integrations: An Interdisciplinary Approach to Sport and Exercise Science’

The Conference will attempt to reflect the diverse nature of disciplines within sport and exercise science, with keynote and symposia speakers addressing a range of contemporary issues from both research and applied practice. Confirmed speakers include: Dr Ken van Someren FBASES (English Institute of Sport); Prof Scott Fleming (University of Wales Institute, Cardiff); Drs David Stensel and Brett Smith (Loughborough University); Dr Paul Brice (UK Athletics); Dr Jacky Forsyth (Staffordshire University); Dr David Tod (Aberystwyth University); Vinny Webb (Rugby Football League); Prof Ken Green (University of Chester); Prof Alan Nevill (University of Wolverhampton); plus a range of other academics and practitioners.

As usual, the Conference will enable undergraduate and postgraduate students to present their research in a supportive and flexible environment. However, an additional feature to this year’s Conference will be the opportunity for students to present and receive feedback on case studies from applied practice, which will be beneficial for those undertaking, or looking towards, Supervised Experience. The Conference will also incorporate a careers fair, providing opportunities for delegates to speak with organisations involved in employing sport and exercise graduates. As with previous Conferences, students will also be actively involved in co-chairing sessions alongside established academics.

Some important dates for the Conference are:
Registration and abstract submission opens: November 2010
Abstract submission and registration deadline: Friday 25 February 2011
Return of abstracts to authors following review: Friday 4 March 2011
Re-submission of final abstracts: Friday 11 March 2010
2011 BASES Annual Student Conference: 12–13 April 2011

We have endeavoured to keep costs as low as possible to encourage students to attend the Conference. Prices are as follows:

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<th>Category</th>
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<th>BASES Non-Member</th>
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<td>£130</td>
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<td>One-day delegate**</td>
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* This includes Conference attendance on 12 and 13 April, all meals (including breakfast on 13 April), a Conference bag, accommodation on 12 April and Conference dinner.
** This includes Conference attendance on selected day, lunch on day of attendance and a Conference bag.

Visit www.bases.org.uk/Student-Conference

BASES Certified Exercise Practitioner
Alan Darby, Addenbrooke’s Hospital

High Performance Sport Accreditation (Physiology)
Neil Gibson, Heriot-Watt University

BASES Annual Conference Grant Winners
Dr Gary O’Donovan, University of Exeter

BASES Undergraduate Endorsement Scheme
The following courses have been endorsed by BASES:

- Sport and Exercise Sciences – 3/FT BSc (Hons), University of Chester
- Sports Science – 3FT/6FT BSc (Hons), University of Winchester

Movers and Shakers

Prof Ken Fox
Professor of Exercise and Health Sciences Ken Fox FBASES has received a Fellowship by Distinction (FFPH) of the Faculty of Public Health of the Royal College of Physicians. This is the first award of its kind to a specialist in physical activity.

Prof Fox received the Fellowship for his contribution to physical activity research and policy. He has served on several government committees as an expert in the role that physical activity plays in prevention and treatment of ill-health over the last 15 years.

Dr Dominick Micklewright
After three years Dr Dominick Micklewright has stepped down from the Editorial Advisory Board of The SES to focus on his role as Chair of the Division of Sport and Performance.
As with any equipment-based sport, the pursuit of optimal design and performance gain has led to much experimentation and innovation over the years. A casual glance through the photographic records of Paralympic sport will show this evolution, from sport being performed in day chairs by means of ingenious adaptations and add-ons, through to more recent years where competition-specific racing and court chairs are the norm. The same pattern is seen across many sports, whether it be seating frames for throws events; ramps for the delivery of boccia balls or prosthetics for amputee track athletes and cyclists. Indeed, the image that many associate with the Beijing Games is that of Oscar Pistorius, whose prosthetics, for a time, were probably more famous than himself.

By 2012, the equipment used by Great Britain’s Paralympic athletes at the London Games will have evolved again; this time with the benefit of the application of the latest methods and materials from science, research and applied technology, including Formula 1 and aerospace. The racing wheelchairs you will see in London will have benefitted from the £1.5 million partnership between UK Sport and British Aerospace Engineering Systems, a partnership that has allowed the same design and testing methods employed in the development of the Typhoon fighter jet to be brought to bear on the racing position and chair configurations. Naturally, there is a sense of anticipation in the lead up to the IPC Athletics World Championships, which will be held Christchurch, New Zealand, from 21–30 January 2011.

Whilst it is easy to automatically think of wheelchair athletes when thinking of Paralympic sport, but more subtle interventions can still ensure a competitive advantage for our best athletes. It’s hard to consider, for example, a stool as such a vital piece of equipment, but the work done by Loughborough University’s Sports Technology Institute to redesign the seat that allows Paralympic, and now Commonwealth, gold medallist Danielle Brown ensure perfect weight distribution when competing in the women’s compound class in archery, has supported her quest to be a double-Paralympic champion.

Elsewhere, teams are working to redesign court chairs (those used for basketball, rugby and tennis); again, optimising materials with a special focus on the athlete/equipment interface and striving to ensure a greater synergy between man and machine. Unfortunately, some of this work is so sensitive in nature that to go into more detail would possibly tip-off our opponents to the exact implementation; if you want to see more, it is likely that you will be able to get a first glimpse at the same time as the opposition do — at the opening matches at the Games themselves.

This work is the brainchild of Alison Macpherson, who, as part of Dr Scott Drawer’s Research and Innovation team, is UK Sport’s lead Research and Innovation Officer for Paralympic sport and has driven many of the equipment projects to date. The next challenge is to develop and refine real-time, field-based feedback mechanisms. It is looking more and more likely that this will be made possible through some of the technologies being developed as part of the Elite Sport Performance Research in Training with Pervasive Sensing (ESPRIT) project. Headed up by Prof Guang-Zhong Yang from Imperial College London and Dr Drawer of UK Sport, and supported by Queen Mary, University of London and Loughborough University, the ESPRIT project is part-funded by the Engineering and Physical Sciences Research Council and has a total project budget of £8.5 million. It is a great example of collaborative working and the sharing of technology across disabled and non-disabled sport. Considerable progress is being made in sensor technology, with the ultimate aim to produce sensors that can be integrated within equipment or attached to a wheelchair, without adding weight or bulk that might negatively impact upon performance. This will be a vital tool with huge potential for coaches and scientists alike, and something that would allow a real insight into the demands of and adaptations to the sports. Getting this tool right would not only allow a method of assessment that could be used to track training progress, but it could equally be used to measure the success of any individual intervention.

At the recent ESPRIT conference, the ‘Paralympic Challenge’ strand brought together a diverse group of engineers, practitioners and academics for focused discussion on the opportunities that still remain for 2012 impact. The areas considered were biomechanics, ergonomics, mechanical design, integrated sensing and prosthetics. Discussions in these areas focused squarely on developing the final points of the performance jigsaw and, most importantly, on interventions that can be delivered in a time frame to allow significant performance impact. Many good ideas were generated and it is now a race against time to sort through these ideas and put a package of support around the ones with the very highest potential. Without a doubt, if you look closely enough, you will be able to find evidence of the outcomes of these projects in the field of play at the London Games.

The commitment to making a difference to Paralympic performance come 2012 is clearly there, with many partners working in tandem in an effort to put our athletes at the cutting edge. Whilst Lance Armstrong might have been right in stating “it’s not about the bike”, it is difficult to conclude anything other than when it comes to getting that vital edge over competitors, with this much support behind them, it looks like our Paralympians are in good hands.
My involvement with the Delhi Commonwealth Games would allow me to widen the scope of my understanding of major Games and focus on a range of sports, many athletes, many coaches, many venues and many challenges. It would expose me to the tensions and pitfalls of high-level competitions, the fine line between success and failure, and how practitioners and team staff play a vital role in contributing to athletes’ outcomes; all of which were intended to significantly contrast with my previous perspective of that environment.

Attending a major Games had been something I had aspired to from childhood and I had experienced the madness of the Athens and Beijing Olympic Games from the perspective of an athlete on two previous occasions. As a lightweight rower on the Irish team, my preparations for those Games had been long and painstaking and I thoroughly understood how to behave in that environment as a performance athlete, after years of trial and error and fine-tuning.

Post-Beijing, I grasped the opportunity to be part of Sports Institute Northern Ireland, working as a performance co-ordinator to plan and manage athletes’ preparations for world, Commonwealth and Olympic competitions. This has necessitated my accelerated learning across 10 sports to understand the different sports’ structures, the range of athletes and coaches involved, and the unique challenges faced by individuals in those sports. As much as my experiences as an athlete have been vital over the last two years, they were only from a single perspective, in one sport and part of a small tightly knit group. Planning and managing support for Northern Ireland athletes has highlighted that how I used to operate in that environment was individualised to work for me and therefore unique to me.

As part of the Practitioner Development Programme, co-ordinated by the English Institute of Sport, the opportunity arose to attend the Games and continue this accelerated learning. Delhi afforded the chance to see athletes and coaches I had been working with perform in the high pressure environment of the Commonwealth Games. With four Sports Institute staff entrenched in the Northern Ireland support team, they would act as reference points to enhance my understanding of the Games environment and as colleagues I could communicate with both during and after the Games to reflect on my experiences.

During the September Practitioner Development Programme workshop in Loughborough I saw footage and photographs of the Games village endlessly replaying on the BBC. What other images did anybody need? If the athlete village was that bad, what would the rest of the city be like?
Couple that with the infamous “Delhi belly”, risk of malaria (or dengue fever that was on the rise), general fears over drinking water, killer monkeys on the loose (although the two I saw appeared tame…from a distance) and, of course, terrorist threats, my preconceptions were not good. I tried to reassure myself by purchasing a Lonely Planet guidebook to Delhi, which proceeded to reinforce all my fears…with additions.

I had worked specifically with athletes from archery, boxing, shooting and swimming in the two years leading up to the Games and, in the final nine months, additional support had been made available to a wider group of athletes from these sports. Having developed relationships and overcome challenges with athletes over an extended period, I was tasked with making a positive performance impact on new athletes and coaches within a short timescale. Where possible, the Sports Institute staff maximised chances to bring different sports together for shared learning and to foster a team environment, particularly looking at medical and nutritional education, and the lifestyle and psychological challenges of a major Games setting; areas that posed potential difficulties in the Delhi environment. This group work was contrasted against individualised support, where possible and appropriate, and covered fitness, mental preparation, enhancing athlete–coach relationships and injury management. For example, with the boxing squad, we were able to develop a training camp based at the Sports Institute in the final week before departure to Delhi, as this met the coaches’ needs to keep the athletes injury-free, on weight and in a managed environment, particularly looking at nutrition.

Preparing and managing the athlete support prior to competition was my primary aim, but witnessing first-hand how this impacted and evolved within the intense Games environment offered me a great opportunity. Being able to see how those athletes reacted in the competitive environment and watching for signs of them bonding within their team and supporting other Northern Ireland sports; seeing if the work on nutrition and hydration was being adhered to on the field of play; monitoring the body language of athletes to coach and vice versa between rounds in the boxing or ends in archery; and generally looking for the development of professional habits, all provided learning about the impact our service had provided.

Some of the challenges athletes and coaches faced were quite public. The re-laying of sections of the athletics track was one that the media latched onto, amongst others, including the inaccurate scales for the initial boxing weigh-in and sickness spreading through various teams. The challenges were, of course, not merely for the athletes. Security was a major concern coming into the Games and overseas personnel received negative publicity, but this also caused frustrations for spectators and team personnel.

My colleagues had difficulties entering the venues due to poorly informed security supervisors confiscating necessary articles and, at times, being simply obstructive. The official Commonwealth Games cars for team staff made bouncing from event to event, essential for the staff servicing athletes across a range of sports; a better option than relying on the less efficient bus service. The more experienced staff enabled me to quickly learn how they handled these situations. Similarly, first-time Commonwealth coaches were benefiting from exposure to Northern Ireland Commonwealth Games Council staff other coaches and athletes; with experiences they could share enabling improved decision making and development of coping strategies. Having had the chance to communicate with experienced coaches and service providers who were managing in these situations will allow lessons to be carried through to the decisions I make preparing athletes in the future.

The Northern Ireland team achieved a healthier medal haul than previous years, with young athletes delivering winning results. These medals came from sports and athletics outside those with proven records at that level and there was strong public support for the team during the Games and afterwards. The journey allowed me to more fully understand the context of these athletes’ results, which will be important to reset goals for the future. I would look to re-evaluate the impact of our service input with sports coming into the London and Glasgow Games, and maximise every opportunity around test events, playing surfaces and coaching opportunities. My experience in Delhi also highlighted that for success at the Commonwealth Games, it can be beneficial for athletes to be on the World and Olympic pathway, with the Commonwealths being “a part of the picture”.

I went to see the unique challenges of the Commonwealth Games and to better understand coaches’ needs and the demands on athletes across a range of sports. It allowed me to see how athletes and coaches reacted to pressure, the benefits of the work we had undertaken in the preparation phase and how, moving forward, we can add value leading up to London 2012 and Glasgow 2014.

My experience has stimulated ideas and new approaches that I hope to develop and implement in the months ahead. Whilst some of the ideas will necessitate me having the confidence to think further “outside the box” and create more challenging environments in order to ultimately gain an edge for our athletes, many of my approaches involve the better understanding I gained in Delhi of athletes, coaches, colleagues and myself. Recognising how we each reacted differently when pressure was applied, the various coping strategies used and identifying the default operating styles of myself and others will allow me to find ways of communicating more effectively and manage similar situations towards better outcomes. I feel revitalised for the 22 months that lie between the close of the Delhi Commonwealth Games and the opening of the London Olympic and Paralympic Games. So much to do and so little time!

### 2010 Commonwealth Games Medal Table

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Richard Archibald

Richard is Performance Co-ordinator with the Sports Institute Northern Ireland and works with Olympic and Commonwealth sports. He began his role in 2008 having previously been an Institute athlete during his nine years as an Irish international rower.
When Did Sport Become So Unsporting?

The sporting summer of 2010; what will be the enduring memories of proceedings this year, I wonder? Will it be Mo Farah's momentous European Gold in the 10,000m? Maybe the Great Britain swimming team’s best ever performance at the European Swimming Championships? I suspect not. My money’s on this summer’s sporting proceedings being remembered for all the wrong reasons.

The first sporting revelations of note came courtesy of cricket. England was playing host to Pakistan, as a potentially competitive series was about to be contested. Only a few days of glory were to be had, with fans celebrating the England men’s team’s 3-1 series victory. Little did we know that the actual explanation for England’s apparent dominance was that Pakistan had other priorities, which didn’t involve competitive cricket. As it transpires, four players from the Pakistan team were allegedly accepting money in return for deliberately bowling “no-balls”; information that could potentially be used in illegal betting scams. Cricket has been long cited as “the gentleman’s game” and held up historically as a sport with high moral and ethical standards. So how has an honest sport turned into a breeding ground for criminal activity?

There is an argument claiming that cricketers (especially on the Indian subcontinent) are easily enticed by financial “incentives” as they are paid a great deal less than footballers, golfers, Formula 1 drivers and tennis players. Whilst this is a tenable suggestion, the implications are wide-ranging. Are we, in effect, saying that low-paid athletes are more likely to cheat than those with fat pay packets? In 2009, Nelson Piquet Junior was found guilty of Formula 1 race fixing, so perhaps the question we should be considering is whether paying players to toss a couple of no-balls is viewed as a form of cheating in Pakistan. Maybe the acceptance and regularity of such events within the Pakistani cricketing community means that these actions are considered unremarkable. Fixed games, no matter to what degree, are meaningless. Sport is about the competition, the spectacle, the desire to win and arousing passion amongst players and spectators alike. What future then for a game that has deviated so widely from its original values?

The next question, instigated by the summer’s “sporting” activities is: Where does one draw the line between one’s professional and personal life? Not a difficult query to answer for the majority of us, unless of course you are a Premier League footballer. Being paid gargantuan sums of money a week for kicking a ball around a field apparently permits what you do in your spare time to be splashed all over the newspapers. We all enjoy the spectacle of the skill and technical prowess of our national sports stars, but should we really be worried about what they do off the pitch? Well, I suppose we should if it affects what they do on it. John Terry’s alleged extramarital affair led to his unprecedented sacking as the national captain because the matter directly affected a teammate (Wayne Bridge). Yet, when Wayne Rooney allegedly decided to travel down the same route (in exchange for money), the exposure of said story actually improved his performance as he found the back of the net against the Swiss in the Euro 2012 qualifier in September.

It is widely recognised that Rooney put in lacklustre displays in the earlier World Cup campaign, with speculation that his “extracurricular” activities are to blame. Added to the infidelity are further examples of deplorable behaviour; observed this year alone. Anecdotally, there have been reports of Rooney swearing 100 times in a 90-minute match. By my calculations, that’s 1,111 obscenities per minute. Then there’s the smoking, the drinking, the fixation with material wealth, the apparent visits to massage parlours, the list goes on. It is no secret that professional footballers are widely recognised as having a positive impact on young people whether they like it or not. I have no doubt that Rooney would acknowledge this; however, this adulation does not come without responsibility. The clear distinctions between activities on and off the pitch are no longer mutually exclusive. What view of sport is he portraying to the young; a distasteful lesson in selfishness, immorality and cheating?

In my mind, the summer’s proceedings heralded the destruction of the Corinthian ideals that once characterised sport. It’s time the relevant organisations took a stand before these sports are permanently scarred by players’ intolerable actions. As sport and exercise professionals, the question we should be addressing is whether the demise of the true nature of sport may be putting our roles at risk or whether it is adding a new dimension.

Claire-Marie Roberts
Claire-Marie Roberts is a lecturer in sport psychology at the University of Glamorgan and has previously represented teams competing in the FA Women’s Premier League.
Standing on the Shoulders of Giants

A research paper can be inspiring, intriguing or sometimes challenging. Seminal scientific papers represent a quest by scientists to test and build upon our knowledge. Individually they represent those thrilling moments when science allows us to understand better and see further. Research papers don’t just inform, they influence, contest and shape our own research, teaching or practice. Emma Ross asked BASES Fellows to tell readers about inspirational sport and exercise science papers and publications; from the classic research papers that have made a significant impact on the development of sport and exercise science disciplines, to those that have changed or challenged some long-held views. The words sent in by **Prof Craig Sharp FBASES** were so compelling that we decided to feature his full account of the publications that have most influenced him and shaped his scientific career. Many thanks to all the Fellows who have responded so far; the series will continue into 2011 with seminal sport and exercise science publications introduced and discussed by other BASES Fellows.

In my case, I came into the field of UK sport and exercise science professionally at Birmingham University relatively early in 1971, although I’d been heading that way since about 1965. There were comparatively few specific sport science articles at the time, except that the puzzle of muscle contraction had then recently been solved by the Huxleys and Henson, and in Birmingham, future colleagues Gerta Vrbova and Olga Hudlika were working on the newly discovered slow and fast muscle in terms of its experimental alteration by external electrical currents of different frequency. So, the late 1960s and early ’70s were exciting times in muscle physiology.

Probably for me, the single most influential paper, in a general way, was in an issue of The Scientific American of 1965, titled simply The Physiology of Exercise, by Chapman and Mitchell, which I read in the library of the University of Nairobi. In the early 1950s I had been taught physiology by Jim Black (later Nobel Prize winner, discoverer of beta blockers etc.), and was later taken onto his staff at the Department of Veterinary Physiology in Glasgow, where he certainly inspired my very strong and relevant interest in cardiorespiratory and muscle physiology, although from a potential disease rather than exercise viewpoint. But it was that article from The Scientific American which opened up a holistic view of the physiology of exercise for me and, as I was training hard at that time, both in trying to get into the Kenyan squash team and to run up Mount Kilimanjaro (and compete in the Nairobi–Naivasha 54-mile race), I thought a lot about the integration of multi-systems exercise physiology that the article suggested; thus, it set the scene.

Other than that, in the late ’60s, it was individuals rather than articles, who were the main influence. I listened a lot to my friend John Durnin (of skinfold fame) back in Glasgow and attended his seminars and those of visiting Prof Archie Sloan (who wrote a short book of exercise physiology for physical education students). But what especially interested me were Durnin’s measurements or references to the energy...
costs of various activities (including 31 sports), which he published with R. Passmore in 1967 in their Heinemann book “Energy, Work and Leisure” (the front cover features him playing squash wearing his faithful Max Planck Respirometer).

In 1968, I went with Glasgow muscle physiologist Prof Joe Lamb to the winter meeting (on muscle) of the Biophysical Society, where I heard both Andrew and Hugh Huxley give papers on their electron microscopy of muscle; at the time both were formalising the concept of the “sliding filament” hypothesis of muscle contraction. Prof Geoff Elliott denied this hypothesis flatly, saying that the cross-bridges held the sarcomere in position, but did not produce the contraction.

That, he said, was done by the sarcomere acting as a condenser in response to the electrical impulse from the motor-end plate. This argument developed into a spectacular (and enjoyable) shouting match between Andrew Huxley and Geoff Elliott as to the nature of the electric charge! All this greatly added to my exercise physiology interest.

Ever since entering the field of what I saw as “exercise physiology applied to sport” in 1971, I have, of course, been an avid reader of the literature and have been influenced by thousands of articles and texts from hundreds of fellow scientists and coaches and competitors, together with their conference presentations and innumerable general conversations, correspondences and e-mails.

So, if I was to quote writings of seminal influence for myself, I would list three in particular: The Physiology of Exercise (that mid-60s Scientific American article), Durnin and Passmore’s 1967 “Energy, Work and Leisure” and the first edition of Astrand and Rodahl’s “Textbook of Work Physiology” in 1970.

Vrbova and Hudlicka’s differential muscle fibre work publications in the 1970s, Hugh Montgomery’s ACE-gene paper, Tim Noakes’ papers in the 2000s on the concept of a central controller of exercise fatigue, together with current debate over lactic acid’s contribution as a fatigue agent are four other publication topics that have given me much thoughtful interest.

I have noted, of course, that sport and exercise physiology sprouted (for me) five particular specialities relating to sport and exercise, namely: children; women; ageing; immune function; and physiology testing, by respectively: Oded Bar-Or’s 1983 “Pediatric Sports Medicine for the Practitioner: From Physiologic Principles to Clinical Applications”, Christine Wells’ 1985 “Women, Sport and Performance”, Waneen Spiridou’s 1995 “Physical Dimensions of Aging”, Michael Gleeson’s 2005 “Immune Function in Sport and Exercise”, and Edward Winter et al.’s two volume (sport and clinical) 2007 “Sport and Exercise Physiology Testing” – BASES own textbook guidelines. These five subject areas were all data-rich, but lacked detailed integration, which these five volumes were the first to comprehensively provide. (those texts have mostly been updated or superseded but they were/are seminal).

Postscript: In a previous (veterinary) life, I was excited by Jim Watson and Crick’s 1953 Nature paper “A Structure for Deoxyribonucleic Acid” (Nature, 171, 737–738).

Finally, not so much a paper but a whole text: P-O. Astrand and K. Rodahi’s first “Textbook of Work Physiology” (1970) read like a series of journal papers from cover to cover. There was nothing like it at the time and it was a major influence in my early years in exercise and sport physiology.

The enthusiasm of my veterinary biochemistry prof, Bill Mulligan, for the Watson and Crick 1953 Nature paper on DNA structure started an unfilled genetic interest, fuelled later by a lecture on the genetic code by Jim Watson himself during a postgraduate cell biology course. Many years later I was excited by Hugh Montgomery’s 1998 Nature paper on the first identified “fitness” gene (the Angiotensin Converting Enzyme or “ACE” gene), and by the more recent concepts of “gene doping”. These all fed an interest in the genome, epigenome and sport; a topic which will become an important focus of exercise and sport science (already picked up by Neil Spurway and Henning Wackerhage in their “Genetics and Molecular Biology of Muscle Adaptation” 2006).

Dr Emma Ross

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References


INTERVIEW |

BASES Votes “Yes” for Health Professions Council Regulation: An Interview with Prof Jo Doust FBASES, Chair of the Association

Q Were you surprised at the vote and how sure are you that this is what members want?

I wasn’t surprised. BASES members are thoughtful and committed to the development of our subject. From 2009 to the summer of 2010, the BASES Board has arranged activities to ensure members had opportunities to hear about, and contribute to, the debate. We met twice with senior members of the Health Professionals Council (HPC). A representative of the HPC presented at the 2009 BASES Annual Conference. Discussion and FAQ documents were issued to members, the BASES website had special pages on the HPC question, four open meetings were held around the UK and a formal vote (in person or electronically) was held at the 2010 Annual General Meeting in Glasgow. The consultation drew numerous comments and helped considerably in clarifying the issues and concerns of members. Feedback during the 18-month consultation period was predominantly in favour of the HPC. The final vote was very strongly in favour, with 94% for HPC, 5% against and less than 1% abstentions.

Q Why has BASES taken this direction?

In the earliest days of the Association, members were predominantly University academics working in a research and teaching environment, but with a changed external climate, increased membership and members working in a wide range of commercial and public sector jobs, it became timely for BASES to consider the nature of our “profession”. What makes a profession? There is a considerable literature on the features of traditional professions (medicine, lawyers and religious figures) as well as the evolution of modern professions, such as physiotherapy or osteopathy. Some of these “profession features” are inherent to the discipline, while others are concerned with legitimisation and status.

Many of the inherent features of a profession are already well developed in sport and exercise science: A sophisticated knowledge and skill set; a code of ethics; an independent science with a substantial body of knowledge; autonomous working; standards of practice; a professional body; and the provision of a specialised service. Some inherent features are less well developed, such as a strong public voice, high prestige and high earnings. Features of a profession associated with legitimisation are currently absent or weak, such as legal protection, state authority, monopolisation of a specialty and formal recognition by other regulated professions.

Q What is the The Health Professions Council?

The HPC is an independent UK regulator, and was set up to protect the public. Its purpose is ‘to safeguard the health and wellbeing of persons using or needing the services of registrants’. To do this, it keeps a register of health professionals who meet its standards for their training, professional skills, behaviour and health.

The HPC currently regulates 14 health professions: Arts therapists, Biomedical scientists, Chiropodists/podiatrists, Clinical scientists, Dietitians, Occupational therapists, Operating department practitioners, Orthoptists, Paramedics, Physiotherapists, Practitioner psychologists, Prosthetists/orthotists, Radiographers, Speech and language therapists. All of these professions have at least one professional protected title that is protected by law, including those shown above. www.hpc-uk.org

Q Why can’t BASES just self-regulate?

It could, but if we hold to self-regulation then we risk never achieving the legitimisation and public recognition our profession deserves. We risk being sidelined by other professional associations and not recognised by employers and there are threats to our current situation. Significantly, the British Psychological Society, following similar considerations to ours, came to the conclusion that practitioner psychologists should seek to become a regulated profession. Other organisations associated with coaching, fitness and health professionals might also seek to promote their own qualifications.

In effect, the core profession of a sport and exercise scientist might be chipped away by organisations that overlap with us, but whose primary purpose and way of working lies elsewhere.

We cannot rely on the collective weight and quality of our work and our accreditation schemes to give members the standing they
Significantly, the British Psychological Society, following similar considerations to ours, came to the conclusion that practitioner psychologists should seek to become a regulated profession.

Q How does all this fit with Accreditation?
Seamlessly we hope! The Accreditation scheme is deliberately designed to confirm an individual’s standing with respect to those inherent features of professionalism mentioned at the beginning of this interview (i.e., knowledge, skills, standards, ethics etc.). Our BASES proposal to the HPC will be for Accreditation to be the entry standard for registration. Additional bureaucracy will be minimised; therefore, a young person wishing to become a professional sport and exercise scientist will see a clear and integrated pathway through first degree, higher degree, Supervised Experience, and Accreditation and HPC registration. Furthermore, the existing BASES continuous professional development provision of workshops, conferences and the like, will act, with other forms of continuous professional development, as the means to retain Accreditation and registration.

Q Do I have to be HPC registered to remain a BASES member?
No. Some members (e.g. working in lecturing or research) may feel that registration offers insufficient benefits and is inappropriate to their academic ambitions. Others, who work in applied and practice areas will certainly feel that the advantages of HPC registration are clear. For certain sectors (e.g. health service work) it might be that HPC regulation becomes a requirement of a job. However, if you wish to use the title Sport and Exercise Scientist in your work as a practitioner then you will need to be registered.

Q Will the name be sport and exercise scientist?
During the consultation there was a wide range of opinions about the name. The initial suggestion for the name (known as the regulated title, protected by law) is “sport and exercise scientist”, but members are not yet fully convinced this is the right (or only) choice. Some members see a problem since they want their title to reflect their exact specialism. Others do not see a problem; they view the title “sport and exercise scientist” as the base description for the profession (in the same way as people external to other professions see no problem with physiotherapist, doctor, engineer etc.) and they describe any particular speciality in other ways as their career develops. We will consult further on this over the next few months.

Q If the title ‘sport and exercise scientist’ is registered, then presumably the titles ‘sport scientist’ and ‘exercise scientist’ could be used by anyone?
No. The HPC states that: A person commits an offence if they use a protected title if they are not registered with the HPC. It is also an offence to intend to deceive by implying that you are a member of one of the professions that we regulate. An example of this is if someone states that they provide sports science services when they are not on our register. Using the titles ‘sport scientist’ and ‘exercise scientist’ as separate names would be regarded as attempting to deceive. A person cannot just make a subtle adjustment in the words and think this is O.K.

Q Isn’t all this going to cost me money? Is it worth it?
HPC registration costs £76 per year. BASES membership costs just under £100 per year. Both of these are tax-deductible and so total, perhaps, £140 per year. If you factor in continuous professional development costs, such as some workshops, short courses and a conference over a five-year renewal period, the overall cost of maintaining professional membership and registration might average £300 per year. For this you will get the legal protection provided by the HPC and increased professional standing, as well as the wide range of BASES membership benefits.

Q Won’t it mean that BASES will become disempowered and fade away?
Absolutely not. The HPC is primarily concerned with the protection of the public through the maintenance of the register of suitably qualified individuals and the legal matters associated with that role. The HPC has little to do with the broader professional activity of associations. BASES will remain the professional body responsible for developing and supporting the discipline of sport and exercise science and distributing knowledge in sport and exercise sciences. All of the activities of the Association will continue and its strategic plan remains in place. BASES will continue as a not-for-profit professional membership organisation for sport and exercise scientists, with numerous benefits of membership.

Q What happens next?
During the 2010-11 year; BASES will prepare its application to the HPC. This will amount to perhaps a ring binder or two of documentation. The HPC will require us to demonstrate that we: Cover a discrete area of activity, displaying some homogeneity; apply a defined body of knowledge; practise based on evidence of efficacy; have at least one established professional body that accounts for a significant proportion of that occupational group; operate a voluntary register; have defined routes of entry to the profession; have independently assessed entry qualifications; have standards in relation to conduct, performance and ethics; have “fitness to practise” procedures to enforce those standards; and are committed to continuous professional development. We will also consult with, and seek support from, other relevant bodies in sport, exercise, academia and other professions.
We would expect the application to be submitted by summer 2011 and then the HPC Board will consult and decide if they support our application. The HPC Board would then make a recommendation to the Home Secretary and a motion would be placed before Parliament for us to enter the regulated professions register. This final parliamentary stage is subject to government priorities and might take several years to reach completion.
BASES has established a steering group to guide the submission to the HPC. The group will comprise myself as Chair of the Association, experienced and knowledgeable members Dr Chris Sellers, Gordon McGregor, Prof Edward Winter FBASES and Prof Andy Smith FBASES, and BASES officers Dr Claire Hitchings (Executive Officer) and Kate Yule (Education Officer).

Q How will I know what happens from now on?
The steering group will keep people informed by the usual means and all the latest information will be added to the HPC pages on the BASES website www.bases.org.uk/Health-Professions-Council.
For the applied physiologist, the continuum of “how much can be prescribed” can be vast as it depends entirely upon the nature of the coach encountered. Here are a few coach “types” and tips on how to get the best out of them.

**What do coaches want?**

At one end of the spectrum, the applied physiologist has absolutely nothing to do with training and is, perhaps, never allowed to set eyes on the programme in case he or she finds the secret of adaptation and become a multimillionaire. The coach in this scenario is akin to the cartoon character Secret Squirrel in that he or she shrouds the programme by means of inordinate levels of concealment. The physiologist does well to contain his or her frustrations, but in this situation, he or she should focus on assembling a picture of the training sessions used by listening and note taking. Then if the resistant coach opens the door ever so slightly, the physiologist can peek through and explain why a particular training session would be productive. The reasoning behind this strategy is that the coach is probably secretive for a reason; he or she may have been undermined by another coach or scientist in the past. Support the coach, stay positive and churn numbers of the highest quality. Trust may come slowly, but when it does, it will be permanent.

The next stage is a programme that is open for viewing, but set in stone and extremely resistant to change from athlete or scientist negotiation. At this level, the physiologist who wishes to influence change has only one alternative – to sow a seed. However, there are coaches who, with such a seed sown in the Cambrian period, would only be willing to consider tweaking a session today. In this instance, the role of the applied physiologist is to get the coach to generate the idea his or herself (wink, wink). Unfortunately, there is no alternative so accept it, get sowing and be patient. These coaches often come with numerous years of experience and observations, and they deserve the respect of being listened to. Many patient physiologists’ hours have been spent nodding and hoping for an opportunity, so if or when it arises, they had better be awake, even if it is to chip away at a small piece of granite.

Moving along from this fossilised level is the scenario in which most physiologists become increasingly comfortable – the coach is receptive and open to modification of one or two sessions. Here, the physiologist is better off focusing on a couple of priority areas and will typically play it safe (e.g., a threshold session of 20–30 mins at such and such a heart rate or 3–4 intervals of 4–6 mins duration at VO2Max; knee-jerk stuff). The major problem with this level of interaction is that the prescription is made without full consideration of the whole programme. Often, a coach will simply include these additional sessions or increase the intensity of a session without conceding volume/intensity elsewhere, which can lead to burnout. The first step for physiologists is to gather crucial information in pre-support paperwork and...
Prescribing when it counts

Approaching a major competition, the established applied sports physiologist will inevitably feel enthused and keen to make a difference. This could be harmless, but it has the potential to compromise athlete and coach performance. During the early phases of preparation (e.g., the first two years of an Olympic cycle), physiologists are looked to for ideas and innovation. This is their opportunity to make changes, test and refine ideas through the mid-cycle phase. Such evaluation will help the physiologist to settle upon a strategy towards the third quarter of preparation. But once there are only 18 months to go, there is little room for new prescription; unless the training intervention is very low risk, it should be avoided. The role of the physiologist, in this instance, is to reinforce the formulated strategy. However, the physiologist might be plunged into the tricky situation of being asked to make a call on a key training session in the final week or two before competition. Again, session counselling is essential to address why a change is necessary and explain the potential risks and benefits.

Rather than getting caught in the detail of intensity, repetition duration and recovery ratios, simple measures of load and volume are the most elegant tools to help illuminate the decision-making process. The coach will need someone to help clear away the confusion that often results from spending too much time whiling away the hours thinking over sessions at training camps. Most crucially, physiologists should listen attentively and reinforce the strategy and decisions. In this situation, the applied practitioner will require flexibility in approach, whilst demonstrating the technical logic of physiological justification balanced with emotional awareness that acknowledges why a coach is looking to make a last-minute change. In return, the coach will want the physiologist to be conversant with the detail, but he or she will require philosophical reasoning to see the bigger strategic picture. To balance these qualities optimally is rare: most physiologists who move into the applied arena have trouble taking that step forwards into the unknown. From here, the physiologist’s role is to reinforce the strategy and decisions. In this way, the physiologist can move into the applied arena with unerring accuracy, whilst factoring in the detail they require to make changes, test and refine ideas through the mid-cycle phase.

Dr Steve Ingham

Steve is the Head of Physiology for the English Institute of Sport, based at Loughborough University. He has 15 years of experience working with the sports of Athletics and Rowing. He is BASES High Performance Sport Accredited.
Welcome to Glasgow
As preparations for the 2010 BASES Annual Conference were completed, over 400 BASES members and international visitors from 18 countries began to descend upon Glasgow’s beautiful West End. This year, the Annual Conference was hosted by The University of Glasgow, which, being one of the oldest Universities in the world, is steeped in history and tradition.

With its hilltop location and imposing spire, the University’s Gilmorehill campus certainly added a sense of awe and magnificence to the proceedings. This had been designed, in line with the Conference theme of ‘Challenging the Dogma’, to be a catalyst for academic discussion and drive forward thinking in sport and exercise science.

After registering in the glorious Hunter Halls, delegates paraded through the neo-Gothic maze of architecture towards the Joseph Black Lecture Theatre where the opening ceremony and much awaited keynote debate were to be held. Along the way, excited conversations between reacquainted friends could be overheard that, despite the absence of liquorice wands and Bertie Bott’s Every Flavour Beans, made the short journey feel like travelling by Hogwarts Express from platform nine-and-three-quarters.

The debates – part one
In a short time, the Joseph Black Lecture Theatre was filled and, after a formal welcome to the Conference, the first keynote debate was introduced. This year, the customary single-speaker plenary sessions were dispensed with in favour of a series of debates between high-profile academics about some of the most contested contemporary sport science issues.

This was to be a contest in which the keynote presenters would be judged, not by whether they won or lost the debate, but on how they played the game: A tête-à-tête where cleverness, spontaneity and eloquence would surely rule supreme.

There was a fervent atmosphere as the audience eagerly waited to see which of the keynote speakers would be first to yield the shears and who would get the intellectual equivalent of a short back and sides.

The first debate focused on the limiting factors of maximal oxygen uptake and was dedicated to the memory of Dr Andy Cathcart, a University of Glasgow lecturer who was tragically killed in a cycling accident during a recent research visit to South Africa. The debate, skilfully chaired by Prof Neil Spurway FBASES, began with short presentations from each of the speakers. Prof Bjorn Ekblom argued that the cardiovascular system, in particular, the heart’s capacity to pump blood from the left ventricle, was the main cause of maximal oxygen uptake. Prof Peter Wagner argued that, rather than attributing maximal oxygen uptake solely to limitations in cardiac output, an integrated systems approach was needed whereby all aspects of the oxygen delivery cascade were considered, from inhalation right through to cellular processes in the muscle. Prof Tim Noakes argued that the maximal oxygen uptake test, usually involving increasing intensity until volitional exhaustion, lacked ecological validity because it removed the brain’s function of effort regulation.

In the debate that followed, convincing arguments and counterarguments were presented by each of the speakers. One of the distinctions clarified in this debate was between the limiting factors of oxygen uptake and those of human performance, with Prof Noakes arguing that the former question is the wrong question. Nevertheless, the speakers did seem to agree that an oxygen uptake plateau is usually seen in some but not all individuals. Perhaps on this point there could have been more debate and scope for contrasting explanations between the brain, cardiovascular and integrated systems perspectives. As an introduction to the Conference, the first debate was a rare spectacle of academic tenacity in its most open form.

It was good value and even the lack of resolution between the arguments did not detract from such a stirring start to the Conference, which was perhaps best surmised by the session Chair Prof Spurway FBASES: “Our confusion is now on a higher plane”.

BASES 2010 Annual Conference Report
The debates – part two
The second day began with the next keynote debate concerning whether dehydration impairs exercise performance. There were two speakers this time, with Prof Ron Maughan arguing that reduction in body water content of approximately 5–10% limits exercise capacity, especially in a hot environment. In contrast, Prof Tim Noakes argued that the level of dehydration usually experienced in sport does not impair performance and does little more than generate the sensation of thirst to prompt drinking. Despite the opposing points of view there was a remarkable amount of agreement between the speakers during their debate. For instance, both agreed that severe dehydration does impair exercise performance. The main point of difference appeared to be the speakers’ approaches to rehydration, a topic that was slightly tangential to the debate’s title (“Does dehydration impair exercise performance?”). Nevertheless, the debate was yet another rare and engaging opportunity to see two of the world’s leading researchers argue their points of view in public.

The debates – parts three and four
The two remaining keynote debates focused on whether legislating against performance-enhancing drugs was futile and whether physical activity in children can be modulated. Profs David Cowan, Mike Spedding and Martial Saugy respectively provided a legal and ethical perspective, as well as the athlete’s and the tester’s perspectives. Prof Bengt Kayser argued in favour of more pragmatic and less dogmatic ways of dealing with drugs in sport and, as is often the case, the subsequent discussions between the presenters continued on into the coffee break.

Profs John Reilly and Terry Wilkin debated whether we can modulate physical activity in children. Prof Wilkin presented data in support of his “activitystat hypothesis”, which argues that physical activity levels in a child are set centrally and are not changeable, while Prof Reilly argued that it is possible to alter environmental factors to increase children’s activity levels. It was a hugely informative session on a topic for which the answer is far from clear cut.

All the debates were extremely well attended and the conference organising committee must be commended for, once again, bringing together some of the leading academic experts in these areas.

Networking and learning
The Hunter Halls were the hub of the Conference, this was where the posters, exhibitors, BASES information, registration and help desk, and refreshments were situated. Great discussions have been known to occur and new collaborations often made around the posters, which were displayed throughout the three-day programme for maximum exposure. Exhibitors were kept busy at break and lunchtimes by the influx of delegates and their discussions with exhibitors, testing of the equipment and browsing created a great buzz in the Halls.

The programme presented 131 posters, 95 free communication presentations, 15 symposia, a workshop, an invited lecture, a Supervised Experience discussion forum and Accreditation drop-in sessions. In addition, delegates and BASES members were kept busy throughout each day of the Conference with luncheon meetings for Interest groups, BASES Divisions and the Annual General Meeting.
**Diversity in applied practice**

The variety and expertise throughout the symposia ensured there was something of quality and interest for all delegates. Delegate feedback highlighted, in particular, the ‘Sport science support for elite cycling’ symposium, and the joint BASES/European Federation of Sport Psychology (FEPSAC) and BASES/Royal College of Physicians/Fitness Industry Association symposia as engaging, informative and well received.

In the Biomechanics free communications session the take-home message was “diversity” in terms of both the application and data processing of biomechanics data. The applications of biomechanics were presented and ranged from obesity and weight management (Prof Carlton Cooke) to golf (Peter Brooks and James Haigh) and gait analysis (Yating Yang). Not only was the range of biomechanical applications impressive, but what really hit home was the diversity in data processing and analysis. Peter Brooks’s presentation included cluster analysis and data mining techniques borrowed from other disciplines.

The closing keynote session from Prof John Speakman, presented thought-provoking evidence from objective data collected from doubly-labelled water studies in humans and other animals to address the question: ‘Are we really less active than we used to be: What does the objective evidence show?’

**Education and professional development**

Recently, BASES members have unequivocally voted in favour of pursuing regulation by the Health Professionals Council, something that is likely to have a profound effect on applied sport and exercise scientists in the future. Therefore, in the education and professional development free communications session, it was interesting and timely to hear from Prof Bill Montelpare (now of the University of Leeds) about the Ontario experience of the regulation of kinesiologists. The growing interest in sport science education and professional development has highlighted the large number of BASES members who are either lecturers or students, so this popular session also included useful hints on how to incorporate the teaching of ethics into the sport science curriculum (Dr Barbara Cogdell, University of Glasgow) as well as data to suggest that problem-based learning improved attendance, results and student perception of the delivery of employability skills, but only if deployed for at least two years (Kathryn Cook and Mike Smith, Coventry University).

On the other hand, although podcasts of lectures were popular, they didn’t seem to affect academic performance (Mike Hughes, University of Wales Institute, Cardiff). Finally, Dr Richard
Tong FBASES (also of University of Wales Institute, Cardiff) shared some of his musings on the formal and informal ways in which academics obtain insights into student satisfaction.

**Awards and entertainment**

Outwith the daily scientific programme, the social events provided excellent opportunities for delegates to catch up with friends and experience some famous Scottish hospitality. The civic drinks reception at the City Chambers was warmly hosted by representatives of The Lord Provost on the first evening, who welcomed the delegates to the city centre and one of the Glasgow’s most important cultural locations.

Perhaps a highlight for many was the ActivPAL Gala Dinner and Ceilidh, hosted in the Kelvingrove Art Gallery and Museum, an impressive red sandstone building of Spanish Baroque-style architecture. The tables themselves were positioned in the cathedral-like Central Hall with its massive pipe organ that predictably promoted an array of jokes from the 280 delegates as they assembled. The food was excellent and the ceilidh was enjoyable for those who could dance and humbling for those who could not. Perhaps one of the nicest moments of the Conference occurred after the dinner when new BASES Fellowships were awarded by the Association’s Chair, Prof Jo Doust FBASES. Fellowships were awarded to: Prof Celia Brackenridge; Dr John Buckley; Prof David Collins; Prof Carlton Cooke; Dr Jason Gill; Prof Michael Gleeson; Dr Richard Godfrey; Dr Brian Hemmings; Dr Costas Karageorghis; Prof Andrew Lane; Prof Craig Mahoney; Prof Alison McConnell; Prof Marie Murphy; Dr Richard Tong; Dr Ken van Someren; and Prof Greg Whyte.

**The view from the organisers**

As the Conference organisers, we hope that all areas of the meeting (including the programme, speakers, content and logistics) met, and hopefully, surpassed delegates’ expectations. Finally, we further hope delegates found the Conference a welcoming, stimulating, enjoyable and worthwhile experience.

Viki Penpraze and Dr Jason Gill FBASES

**On to Essex**

The 2010 BASES Annual Conference was one that will surely be remembered for many years to come. In the space available it is not possible to provide a detailed account of every session presented there, but it is fair to say that they were many and varied. The scientific programme was extremely well thought out and very engaging for delegates. This will certainly be a hard act to follow for The University of Essex where next year’s BASES Annual Conference will be held.

Dr Dominic Micklewright, Dr Martin Sellens and Dr Joanna Scurr
The acute and chronic effects of exercise are heavily influenced by the mode, intensity, duration and frequency of the activities performed. The outcome and appropriateness of a particular activity also varies largely between individuals of differing exercise experience, age, health status etc. Importantly, this implies that, in some situations, specific exercises/regimes might be inappropriate. Indeed, this is certainly the case. There are also some exercises that are simply bad (i.e., unsafe and/or ineffective) and should be avoided at all times.

**Exercises to avoid for the average gym user:**

1. **“Anchored” or straight-leg sit-ups**

   The sit-up is often used for strengthening the abdominal musculature. Two common, but potentially harmful, variations of this exercise involve anchoring the feet (see Figure 1) or keeping the legs straight along the floor (see Figure 2). The hands are held behind the head or neck and the upper body is lifted. These exercises produce high lumbar intervertebral pressure and compression associated with the large range of lumbar flexion and high activation levels of the rectus femoris and hip flexor muscles that attempt to anteriorly rotate the pelvis (Escamilla et al., 2006). This might cause or exacerbate lower-back pain, or even result in lumbar spine injury, especially in individuals with lower-back pathologies.

   **Figure 1. BAD – the “anchored” sit-up**

   During abdominal exercises, it is safer to avoid active hip flexion and anchored feet, and instead keep the knees and hips flexed during upper body movements. The partial curl-up (see Figure 3) incorporates both of these recommendations. To perform this exercise, lie on your back with your knees bent, feet flat on the floor and hands to the side of the head. Breathe out and lift your head and shoulders off the floor while posteriorly rotating your pelvis. Please note that partial curls-ups and other exercises that involve trunk flexion might be problematic for people with lumbar disk pathologies because there is some lumbar intervertebral pressure and compression. Also people with osteoporosis may be at risk due to potential vertebral compression fractures. Abdominal exercises that resist trunk extension and maintain a relatively neutral spine and pelvis (e.g., the kneeling isometric support exercise; see Figure 4) might be more suitable for these individuals.

   **Figure 2. BAD – the straight-leg sit-up**

   **Figure 3. GOOD – the partial curl-up**

2. **Any compound exercise using a Smith machine**

   A Smith machine is a bar built into a frame that restricts the bar to a vertical path and helps prevent it from tipping sideways. Compound exercises are those that involve more than one joint and muscle group. The Smith machine can be safely used for small movement exercises, such as shrugs and calf raises, where the natural bar path is close to vertical. However, for any compound exercise, such as the squat (see Figure 5) or bench press, the natural bar path is not in a straight line. The unnatural movement involved in the Smith machine squat places inappropriate stress on the lower back and knees. For this exercise it is much safer and more natural to use a
barbell across the shoulders or to hold dumbbells by your side. That said, “body weight” squats (see Figure 6) are usually a sufficient challenge for the average gym user and avoid the issue of safely getting the barbell to and from the shoulders.

Figure 6. GOOD – the “body weight” squat

3. Lifting/pulling behind the head

Exercises that involve lifting or pulling a weight behind the neck should also be avoided; for example, the “behind neck” shoulder press (see Figure 7) and “behind neck” lateral pull-down (see Figure 8). Such exercises involve shoulder external rotation, abduction and horizontal abduction and place inappropriate stresses on the anterior ligamentous and capsular restraints of the glenohumeral joint. This might exacerbate or contribute to glenohumeral joint hypermobility, instability or impingement. These exercises also force the head forward, placing dangerous stress on the cervical spine, which could cause severe and permanent injury to muscles, ligaments and intervertebral tissue. Much safer alternatives include the alternate arm dumbbell shoulder press (see Figure 9) and the “front” lateral pull-down (see Figure 10). With these, the hands and elbows are kept slightly anterior to the shoulder, placing less stress on the anterior glenohumeral joint capsule.

Figure 7. BAD – the “behind neck” shoulder press

The next section focuses on two patient populations for whom exercise guidelines either do not exist or are not clearly defined. These conditions were selected on the basis that they involve specific exercise considerations that might not be widely appreciated.
Exercises to avoid for individuals with abdominal aortic aneurysm disease

An abdominal aortic aneurysm (AAA) is a localised ballooning of the abdominal aorta (diameter >3 cm) caused by progressive weakening of the vessel wall (see Figure 11). This condition is most common in older men, with a prevalence of 5–10% in those aged 65–79 years (Cosford & Leng, 2007). Large AAAs (>5.5 cm) carry a high risk of rupture, a surgical emergency that often leads to death due to severe internal bleeding. Therefore, many individuals with large AAAs undergo elective surgical or endovascular repair to prevent death from rupture. In contrast, elective repair is usually not indicated for people with small AAAs (<5.5 cm) because the annual risk of rupture (<1%) is lower than the risk of intervention. At present, no effective medical strategy exists for patients with small AAAs; most of these individuals enter a serial surveillance programme under the guise of “watchful waiting”.

Reference


Important points

• Exercise programmes should always be individualised; one “size” does not fit all!
• Before designing an exercise programme for someone, carefully assess the health, experience and goals of the individual, and take time to decide what exercises will be safe, appropriate and likely to be adhered to.
• For those performing gym inductions, do not assume that a beginner will have good exercise technique after one demonstration. If possible, plan regular “touch bases” with beginners to make sure they continue to exercise safely.
• Exercise programmes should be challenging enough so that health and fitness improves, but not so challenging that they result in poor adherence and/or injury. Harder does not equate to better.
• Don’t be lazy! If you’re on duty in the gym then it is your responsibility to patrol and make sure people are exercising correctly. ■

Figure 11. Abdominal aortic aneurysm

The safety and effectiveness of various forms of exercise in patients with AAA disease is currently unclear. Nevertheless, it seems reasonable to suggest that heavy resistance exercise, especially that involving significant isometric muscle action and/or the Valsalva manoeuvre, should be avoided. This recommendation is made on the basis that such activities involve extreme elevations in blood pressure (MacDougall et al., 1985) that might cause aneurysm rupture. This is not to say that resistance training should be totally avoided. Resistance exercise, without breath-holding, at 40–60% of estimated 1-repetition maximum, might be appropriate, since intra-arterial blood pressure responses of cardiac patients have been shown to be clinically acceptable in this range (Haslam et al., 1988). Indeed, Myers et al. (2010) recently reported that a one-year training programme involving “somewhat hard” aerobic and resistance exercises was well tolerated and sustainable in patients with small AAAs (<5 cm), and did not lead to paradoxical aneurysm enlargement or increased rupture risk. Interestingly, these authors hypothesised that exercise training (predominantly of the lower-limb aerobic variety) would have a favourable impact on disease progression via improved aortic haemodynamics and reduced inflammation. Therefore, the longer-term “disease-progression” outcomes of this trial are eagerly awaited, as they might show an important role of exercise training in the management of early AAA disease.

Exercises to avoid for individuals with multiple sclerosis

Multiple sclerosis (MS) is a heterogeneous, unpredictable and often disabling condition involving demyelination and degeneration of nerves in the brain and spinal cord. It affects around one in every thousand adults, and is most common in women aged 20–40 years (Noseworthy et al., 2000). The aetiology and pathogenesis of MS are not fully understood, but probably involve immune, genetic and environmental factors (Ramagopalan et al., 2010). The clinical manifestations of MS, which vary greatly depending on the site and extent of nerve damage, include dizziness and balance problems, fatigue, visual disturbances, sensory and motor deficits, cognitive problems, and muscle spasticity. Although there is no cure for MS, treatment might include medication, exercise and experimental therapies. Although exercise appears safe and useful for improving functional capacity in patients with MS (Rietberg et al., 2005), there are specific situations in which exercise, or specific types of exercise, should be avoided. For example, prolonged exercise in a hot environment is generally inappropriate because this will often cause excessive fatigue and heat-related symptom exacerbation. Therefore, light to moderate intensity interval exercise in a cool environment is generally recommended to help minimise fatigue and promote heat loss, whilst still enabling fitness to be improved. Cooling strategies might also be useful in heat-sensitive patients. Secondly, in the presence of severe muscle weakness and balance problems, it is probably best to avoid activities in which falls are more likely (e.g., specific stability ball exercises, walking/jogging on unstable surfaces). Exercising with a grab bar and using a flat space with no trip hazards is useful. Finally, during a relapse (worsening of symptoms), excessive exercise is not recommended. The exercise programme will need to be re-evaluated following recovery as disability levels might have changed.

Conclusion

As sport and exercise scientists, it is our responsibility to design exercise programmes that are safe and appropriate, to educate clients about proper exercise technique and to avoid exercises that are more likely to lead to injury. So the next time you see someone doing, say, a straight-leg sit-up, please go and have a word!

References


Dr Garry Tew

Garry is a researcher at Sheffield Hallam University. He is a BASES Accredited Sport and Exercise Scientist and a BASES Certified Exercise Practitioner.
**Pursuing a Career in Strength and Conditioning: Interning**

No matter what discipline you wish to pursue your career in, it is evident that the competition for the few jobs in applied sport science is vast, especially in the case of strength and conditioning, where it is not uncommon to have well over 200 applicants for a job. **Dave Rydings** looks back at his early career with key advice for those who wish to embark on a similar path.

**Working in strength and conditioning**

Although your degree is important, it is not enough on its own if you want to break into this highly competitive field. Experience is probably the most important criterion during the selection process for any position and internships are becoming a popular way of gaining the experience necessary to take your first step into the profession. As a strength and conditioning coach who has recently completed two very different year-long internships, and as someone who now supervises interns, I would like to introduce a few of the lessons learned from my career path to date.

**Be a student**

I would like to say this article is not intended to deter anyone from pursuing their goals and dreams of a job in strength and conditioning. If you're willing to put the time and effort into developing yourself as a practitioner and you enjoy the process, you can achieve your goals. Firstly, it is important to note that the competition for advertised internship positions is just as fierce, if not more so, than the competition for jobs. Therefore, if you aim to apply for internships, you need to be thinking about building your knowledge, experience and CV as early as possible. I consider myself quite lucky that I knew strength and conditioning was the career path I wanted to follow from very early on in my undergraduate degree so I made sure I gained as much applied experience as possible during this time. This is the prime time for you to supplement the underpinning scientific knowledge you will be learning in your undergraduate degree with the exposure of how to apply this in the world of strength and conditioning. Contact other practitioners and volunteer with or shadow anyone who will let you. (Strength and conditioning coaches typically receive lots of these requests; if you don’t get a response there’s a good chance they have either not got around to responding or they have simply forgotten, so feel free to follow up with a second enquiry and be persistent without being a pain in the backside!) Also consider volunteering with a local, lower-level team where you can easily lead warm-ups and field-based sessions. During my undergraduate degree I worked with a local conference football club, visited various Premiership rugby and football clubs, made numerous visits to English Institute of Sport sites and started to attend strength-and-conditioning-specific conferences.

**Finding an internship**

Once you have gained exposure to the profession and have built your experiences, you will be in a far stronger position to apply for internships for after graduation. When it comes to this application process, it is important to remember that most places run internships as a way of strengthening their department; therefore, you should be aware of how you can bring your own experiences and strengths to the department whilst simultaneously developing yourself as a practitioner. In my case, during my final year at University, I started contacting collegiate institutions in America enquiring about internships, some of which were advertised and some not. In total, I contacted over 30 different institutions but only one responded that was willing to take me on, and that was...
for an unadvertised position. It was then my responsibility to arrange visas, flights, accommodation and so on. I can confidently say that without the experience of my American internship, I would not have been able to gain my second internship with the English Institute of Sport. I am a firm believer that you make your own luck, if there are no internships advertised then create your own opportunity and be prepared to travel; there will always be a strength and conditioning coach somewhere who could do with extra help. It is important to note that, although it is generally considered a necessity to have a postgraduate qualification, I was able to gain my position without one as I knew what I wanted to do and had gained enough relevant experience early on. It is only now, three years down the line, that I have began to pursue a part-time masters-level qualification alongside my full-time strength and conditioning role.

As an intern

It goes without saying that you need to conduct yourself in a professional manner; you will often be leading support to athletes and it is important you conduct yourself in a manner that is conducive to an effective and successful relationship with both athletes and staff. Equally, there may be times when you have to do the less glamorous jobs; although I always had the chance to lead strength and conditioning support to athletes and on various projects, as an intern, I also had to clean benches and maintain equipment on a daily basis. Throw yourself into your internship and take every opportunity to further yourself; however, be aware that this could be a busy and demanding time (I regularly worked 75 hours a week in my first internship and went two months without a single day off in my second). Be prepared to prioritise your workload and ask for help if needed. If you are hard-working and take your internship seriously, I’m sure (as was the case with all my mentors) that your mentors will also take their role seriously and work hard to develop you as a practitioner.

During your internship, it is important to remember that this is only the beginning of your career. By no means does an internship guarantee you progression to your first job, but if you make the most of it, it can. Although you will gain a wealth of experience during your internship process, you should be continuing the activities you began as a student, both during and beyond your internship. Continuous professional development is a vital component of both your progression and the progression of the strength and conditioning profession as a whole. During my later internship I was lucky enough to take part in UK Sport’s Fast-Track Practitioner Programme, gain closer on-the-job support and be given an allowance for professional development, which allowed me to visit other coaches and institutes and attend various conferences both at home and abroad. So if you make the effort to share the knowledge you are gaining, visit and keep regular contact with other coaches, attend conferences, workshops and seminars, keep up to date with the literature and have fun while you’re doing it, and simply enjoy the process, you will never work a day in your life!

On reflection

As an intern I matured a lot both as a person and practitioner. Looking back, I believe over the course of my internships I learnt a lot from a technical strength-and-conditioning-specific perspective; however, I feel some of the most valuable skills I learnt were the non-technical ones, the softer skills. These skills were often neglected as I sought to develop as an intern, especially early on, but are now a big part of my day-to-day success as a coach.

Because everyone has always been willing to help me and I have had some amazing opportunities along the way, I now try to ensure I am as supportive to the interns I mentor as people were to me. Even when things were tough or frustrating, I always enjoyed the challenge and never even considered this might not be the career for me. The benefits of being exposed to many different levels of sport, from professional and collegiate to Olympic and Paralympic, and the lessons I learnt from the challenges that arose were well worth any frustrations; I have only become a better practitioner as a result of them.

David Rydings

David is currently a strength and conditioning coach at Liverpool John Moores University where he works with numerous Olympic, Paralympic, professional and collegiate athletes across a range of sports.
Resilience in an Age of Austerity

Prof Andy Smith FBASES considers the future for sport and exercise science in Higher Education in the current age of austerity

We can be certain that when Charles Dickens penned the line “It was the best of times it was the worst of times” in 1859, he did not have in mind the challenges and opportunities that sport and exercise science faces over the next few years. Nonetheless the opening line of “A Tale of Two Cities” is as good as any description that I have read of the period that sport and exercise science is about to enter. On one hand, we are in an age of austerity; on the other, there are the forthcoming London 2012 Olympic and Paralympic Games. The purpose of this paper is to encourage readers to think about how the discipline and profession can survive in difficult financial times and be ready to thrive in 2012 and beyond.

In looking at financial resilience in an age of austerity, I am going to focus on sport and exercise science in Higher Education. Whilst I recognise, without hesitation, the importance of private and third sector sport and exercise science provision, I believe most sport and exercise scientists work in this area. This University provision is, I fear, about to suffer from the Chinese curse of living ‘in interesting times’. Those who are well prepared, creative and work hard will do well; those who aren’t face an uncertain future.

There is not the space here, nor do I have the competency, to fully unpack the implications of the Browne Report and the Comprehensive Spending Review on sport and exercise science; however, I sense this is a time to “confront the brutal reality but not lose hope” (Collins, 2001).

Below, I suggest 10 things that might help build the resilience sport and exercise science departments need in an age of austerity. I present these ideas not out of the arrogance that I have all (or any) of the answers, but in the hope they will stimulate better minds than mine to come up with better solutions. On reflecting on these 10 ideas, I fear I may have put too much emphasis on cost-saving measures rather than trading out of trouble.

Therefore, I would like to preface my list by encouraging you to find opportunity in the “storm” and to find new ways of generating income and profit.

1. “Head on, hands in”: Follow the advice of Ram Charan (2008) to have a “head on, hands in” focus on out-thinking the competition. Work hard to secure the financial position of your department, but more importantly, think, think and think again. As well as trying to out-think the competition, leaders need to ensure they are a physical presence in the labs and on the pitches, thereby ensuring...
that they know the detail. Leaders in sport and exercise science should ensure that their strategy and its implementation are rooted and grounded in the day-to-day reality of the situation.

2. Fish and cakes: “Fish in new ponds to catch new funding” (Smith, 2006). If existing resource is being cut, don’t fight for a bigger share of a shrinking cake; find a new cake to cut. This might include philanthropy so talk to your development office about the Higher Education Funding Council for England matched funding scheme. Ask your development office to work with you to raise funds; you will be surprised by its fund-raising skills so get the office working on your behalf. Challenge it to raise £50k for you.

3. Vertical marketing: Calculate how much it costs to recruit a student. Your marketing and finance department should be able to help you do this and it will help you recognise how big an investment in time and money it takes to get one ‘burn on a seat’. Once you have spent this resource on recruitment, it makes sense to keep what you have got. This starts by having a good retention strategy in place to make sure you do not lose undergraduates for reasons that are preventable. Equally important, but more challenging, is keeping in contact with your alumni. Your development office should be able to help you do this. Make sure your contact with your alumni is purposeful. Know what you want to get out of this ongoing relationship and what your alumni are going to get in return.

If I was the head of a sport and exercise science department, I would want to: A) market masters, PhDs and continuous professional development programmes to graduates; B) ask my alumni to fund a piece of lab equipment; and C) ask my alumni to suggest how the curriculum could be improved, based on their own experience as former students.

In return, I think the alumni would want: A) to stay in contact with each other and have the opportunity to attend reunions on campus attended by academic staff they know, not just the development office team; B) reduced fees for masters, PhD and continuous professional development programmes; and C) to be listened to if they have ideas on how the degree they hold could be improved.

4. Know your case for support: if push comes to shove why should your University continue to fund your sport and exercise science department? What is it that you can do now and in the short term that will help your University achieve its mission? In answering this question, it is important not to dwell on past success, but to focus on taking your institution forward. You need to be able to make a compelling case in 30 seconds or less or on one page of A4 paper. If you cannot do so then the chances are that you case for support is going to get lost.

5. Identify your core competency: What is your department best at? The obvious answer is sport and exercise science, but such a general answer might be hiding a gem of a core competency that your University might need, but doesn’t know you possess. One that comes to mind is enabling students to learn the scientific method and associated experimental and statistical methods. Sport and exercise science is, in some institutions, the only science in a curriculum dominated by the liberal arts. On such a campus, there is an opportunity to use sport as a vehicle to engage students in other faculties in science. After all, given the scientific advances that are shaping our world, surely it is inappropriate that any student should graduate without having learned the essential elements of scientific literacy.

6. Scenario plan: Scientists make lousy astrologers. However, they are good at extrapolation. There are now a number of texts that can help you develop a scenario plan; see, for example, Mats and Bandhold (2003). Scenario planning will help you and your team think about the future and where you want to get to. This will help you avoid falling into short-termism, a common problem for leaders in an age of austerity.

7. Outsource: Why do stuff that you are not good at doing when someone else can do it better for less money? Are there things in your department that you can outsource, either to other parts of the University or externally? Whilst the final decision may be above your pay grade, if you have a good outsourcing idea, push it up the system.

8. Talk to your suppliers: It is important to recognise that if your department is having a rough financial time, your suppliers are likely to be having one too. Talk to your finance department to make sure your suppliers, particularly those that are small and local, have their invoices paid promptly. For small companies, cash flow is important and your institution should be doing what it can to help. What goes around comes around and when the economy picks up, the suppliers you helped when times were bad will be far more likely to respond positively to requests for sponsorship.

9. Be tough enough to ask for help: Leading a department on a tight budget is not why most of us came into sport and exercise science. From time to time the stresses of the job can threaten to engulf even the most competent manager and the most inspired leader, so don’t be afraid to ask for help. If you don’t have a mentor, get one. Ask your human resources department what support and training it can offer. Ask your director of finance to walk you through your budget to make sure you have a shared understanding of the current position. Ask your director of finance what she/he would do in your position.

10. Understand the Browne Report and the Comprehensive Spending Review: Knowledge is power. Read, understand, discuss and scenario plan.

Many of us have been fortunate enough to have built our careers in times of plenty and have never had to perform in a period of financial cuts. How many of us in sport and exercise science thought the good times would last forever? During the good times did we take the opportunity to build our profession and discipline on firm foundations that could survive an age of austerity? Do we have the resilience to prosper in difficult times? Does sport and exercise science have the leaders and managers to survive and thrive? Will we pull together or pull ourselves apart? Finally, I end, as I started, with a quotation from Dickens and recommend to readers the advice given in David Copperfield: “Annual income twenty pounds, annual expenditure nineteen six, result happiness. Annual income twenty pounds, annual expenditure twenty pounds ought and six, result misery”.

References


Prof Andy Smith FBASES

Andy is a Professor of Exercise and Sports Sciences at York St John University. He is a former Chair of BASES and holds both accreditation and a Fellowship from the Association. In 2005 York City Council and The Press made him York Pride Person of the Year. His research interests are in physical activity and exercise. He is also working in the area of futurology of sport.
Dr Mark Willems received a BASES International Conference Grant to present on the acute physiological effects of downhill treadmill walking in older adults at the 2010 annual meeting of the European College of Sport Science in Antalya, Turkey. Here, Mark reflects on the events that lead to his interest in exploring the impact of regular downhill treadmill walking (i.e., eccentric exercise) in older adults. It is a personal account of his interests, unexpected observations, opportunities and bad luck, from being a student in exercise physiology to a PhD supervisor at the University of Chichester.

Living and dead muscle
My passion for muscle physiology was sparked in the 80s during my undergraduate time at the Faculty of Human Movement Sciences at Vrije Universiteit in Amsterdam. I remember quite clearly how excited I was in my first year when a tutor showed a short movie clip of a rat skeletal muscle that was “isolated” and made to contract. It got me hooked on muscle.

I was very fortunate to be able to pursue a PhD on the relationship between structure and function of rat skeletal muscle. During that time, I made the following unexpected observation: The muscle (i.e., the m.semitendinosus lateralis) lost the ability to produce maximal force when it had been activated at a relatively, though not excessively, long muscle length. Initially, my supervisor and I thought that this observation was related to a problem in the experimental set-up. As we were able to rule out potentially contributing factors, repeated experiments with similar observations confirmed the force loss to be a functional response. This was my first experimental encounter with causing injury to isolated skeletal muscle and it triggered a strong desire to do postdoctoral research in the area of contraction-induced muscle injury. But this was not easy.

I was unable to find a position in that area so I took the opportunity of postdoctoral research on the fracture mechanics of pig meat at the University of Bristol. At least I was able to work with muscle samples, albeit dead, while learning new techniques along the way. Although I was “injuring” dead muscle, my interest in the injury of living muscle had not disappeared. After two years working on dead muscle, I was able to secure a postdoctoral position on muscle injury at West Virginia University in the United States. How fortunate I was again, as this position allowed me to use the first ever dynamometer built for the hindlimb of the rat. The dynamometer was built by a PhD student in mechanical engineering specifically to do experiments on muscle injury in rat skeletal muscles. Unfortunately, and this is the bad luck part of my story, after a few years I developed an allergy to laboratory animals to the point that I had to wear a protective gas mask and use anti-allergy medication almost seven days a week. My health was suffering and I knew that if I would like to continue doing research on muscle injury, a change to work with human participants was necessary.

Why walking downhill?
In 2003, I started working at the University of Chichester, which had excellent facilities to continue my research interest in the functional consequences of contraction-induced muscle injury. This was a time in the UK when funding opportunities on ageing research were more available and the proportion of older people in the population aged 65 and over was estimated to be about 16%. The normal ageing process is associated with reduced mobility, an increased risk of falls and weakness of skeletal muscles. It is also known that some of these negative consequences of ageing could be postponed or diminished by appropriate regular physical activity.

So how could I use my expertise on contraction-induced muscle injury? Would regular eccentric exercise have the potential to provide beneficial adaptations in older adults? It is known that regular level walking has significant health benefits. However, with downhill walking, when muscles are performing eccentric exercise, they are used in a different way and act like brakes. Eccentric exercise is known to be part of traditional resistance training programmes and seems to be more effective in the development of muscle strength. It is possible, therefore, that downhill walking, being an activity of moderate intensity for older people, may result in adaptations that will strengthen skeletal muscles as well as reducing cardiovascular risk factors.

I was very happy that the University of Chichester provided a bursary to pursue this research. What my PhD student Mandy Gault and I first wanted to establish was whether downhill walking by older adults had any effect on the risk factors for falling, a leading cause of death in older people. We therefore undertook a feasibility study to assess the feasibility of recruiting older participants to a 16 week walking programme on a treadmill at comfortable speeds. An extra-ordinary thing happened: The participants found the treadmill approach of walking downhill to be more effective in the development of balance and function, and in reducing cardiovascular risk factors. This project was completed successfully and our work may contribute to our understanding of the changes in physical performance and cardiovascular risk factors through regular downhill walking, which will potentially support exercise prescriptions that postpone deterioration of function and health with ageing.

Dr Mark Willems

Mark is a reader in exercise physiology and member of the Chichester Centre for Applied Sport & Exercise Sciences at the University of Chichester. His main interest of research is contraction-induced muscle injury.
Sport and Exercise Science (2009)
Authors: Thatcher, J., Thatcher, R., Day, M., Portas, M. & Hood, S.
Publisher: Learning Matters Ltd
This text gives a broad overview of some of the key concepts in sport and exercise science. It addresses the fundamental aspects of the key disciplines in sport and exercise and is predominantly aimed at Further Education students as a generalised introductory text. The book is structured into 15 chapters covering introductory information on research, key concepts in sport psychology, nutrition, cardiovascular and skeletal systems and the quantification of human motion. Diagrams, figures, plates and graphs help to illustrate the text and there is further information directing the reader to specialist texts addressing the chaptered content in more detail. There is a series of summary focus boxes and directed tasks within each chapter, innovatively named “critical thinking tasks”. This directed approach appears to encourage the reader to be critical about the content and to that effect addresses one of the aims of the book. The final chapter is somewhat innovative in that it addresses the key concepts from a multidisciplinary approach using simplistic case studies. Although this is a very generalised and qualitative approach, which lacks background depth, the chapter does at least attempt to draw the reader into real sporting scenarios and invite further reading into the specifics of optimising sports performance. The book achieves its objectives in that it introduces the fundamental concepts of sport and exercise science and encourages the reader to be an active learner and critical thinker. This resource would be a useful supplementary text for sport and exercise science students.

Dr Lance Doggart, University College Marjon Plymouth

Advanced Marathoning (2009)
Authors: Pfitzinger, P. & Douglas, S.
Publisher: Human Kinetics
As the title suggests, this book is targeted at advanced marathon runners aiming to optimise performance and those looking to set personal bests or qualify for marathons. The book is split into two sections: “Training Components” and “Training Programs”. The first section begins with a chapter on elements of training. Unlike many of the marathon books I have read, a key difference with this book is its more in-depth explanation of the physiological attributes that most directly determine marathon success. Key elements, such as lactate threshold and maximal oxygen uptake, are discussed, with training tips given for improving these attributes. I found this section highly informative, but brief enough not to be a physiology lecture. This balance of science allows the reader to understand the adaptations that occur with training, a component that many of the less advanced marathon books lack. As well as information on nutrition and hydration, the book delivers further advice on attributes such as core strength, complete with recommended exercises and diagrams for clarity. The second section contains three training programmes for runners, incorporating 55–85+ miles running a week. While not for the novice, this does cater for the “mid-pack” runner who is aiming for race completion in 4 hours, thus making the book appealing to a wider audience. Race day advice and “secrets” of marathoning are there to help coach you through the 26.2 miles and hopefully make it enjoyable. Although this book is aimed at the advanced runner, the clear explanations and advice makes this book very user-friendly and therefore appealing to inexperienced marathon runners. It would be useful for the exercise physiologist as a teaching aid for both clients and students, linking physiological training components with practical applications. I found it a great read and highly informative, and I will certainly be referring to it for my next marathon.

Sarah Forrest, Aberystwyth University

Authors: Kuntzman, A.J. & Tortora, G.J.
Publisher: Wiley-Blackwell
Notwithstanding that this particular incarnation is written for the manual therapist audience, the market is not exactly lacking anatomy and physiology textbooks. So what’s different about this one? Like most, it’s very well presented. The 29 chapters are comprehensive and easy to read, it’s crammed with excellent illustrations that are bright and detailed, and there are several intuitive features. For example, in keeping with the title, there are numerous “Clinical Connections” and “Manual Therapy Applications”. Areas discussed include the physiological effects of massage and other manual therapy modalities, which are covered in reasonable depth. However, greater detail regarding trigger-point physiology and specific stretching techniques commonly utilised by manual therapists would be useful. Another useful feature is the “Exhibit”, a discrete summary of complex areas containing a brief overview, a summary of the anatomy, associated illustrations/photographs and check questions. A big disappointment with this resource, however, is the on-line support. At a glance, the web-based learning packages described in the Preface appear “too good to be true” and it soon becomes apparent that the majority of the packages must be purchased, which is not made clear in the textbook. Some on-line features are free and beneficial, including a practice quiz and a number of peer-reviewed web links. In summary, this is an excellent textbook for all undergraduate students, regardless of their field of study, who require an in-depth understanding of anatomy and physiology. Furthermore, the cross references to the clinical aspects of manual therapy are a useful introduction to this area. I would therefore highly recommend it; however, if I am asked, “in a saturated market, what’s the unique selling point of this particular text?” I would have to conclude it does not have one.

Russ Coppack, Headley Court Defence Medical Rehabilitation Centre
Musculoskeletal Examination (2009)
Authors: Gross, J., Fetto, J. & Rosen, E.
Publisher: Wiley-Blackwell

This publication focuses on basic techniques for physical examination and is organised into regional anatomical sections, including spine and pelvis, and the upper and lower extremities. The book has chapters that define the structures of the musculoskeletal system and discuss the basic components of a physical examination, with its final chapter focusing on an examination of gait. By splitting these different areas up the reader is able to apply principles of musculoskeletal assessment to a specific area. There is then the ability to link this to associated body regions as necessary so, when appreciating the client, the practitioner can take a more holistic approach. The easy reference feature of the textbook facilitates this well; each chapter is organised in a similar order that allows the reader to follow a systematic approach and apply it to the anatomical region. The chapters also include descriptions of abnormalities most frequently encountered while performing the examinations. Each chapter has a large number of basic diagrams, which are mostly in two colours and quite simplistic, yet give a clear snapshot of the anatomical area and examination technique. This book also contains 32 X-rays and magnetic resonance images, all of which are clearly labelled and easy to interpret. This book would be most useful at undergraduate level when students are learning the basics of a physical examination. It could also be a useful reference guide for a clinician wanting to refine his or her skills. Overall, this book is thorough and systematic in its approach to each regional examination. It is well written and concise, and I would recommend it for use at an undergraduate level.

Matthew Fitzpatrick, Greenwich Teaching Primary Care Trust

The Biochemical Basis of Sports Performance (2010)
Authors: Maughan, R. & Gleeson, M.
Publisher: Oxford University Press

Ask any sport and exercise science student if he or she finds exercise biochemistry a difficult subject to learn, and the majority will probably answer “yes”. The newly updated second edition of this text aims specifically to address this concern. The book is aimed at undergraduate students, coaches and athletes as an introductory text on the integrated physiological and biochemical response to different sports. The question is, how do you improve upon what was, in my mind, an outstanding reference already? The updates and additions from the first edition are subtle in some cases, but overall worthwhile. One of the most obvious changes is the use of a two-colour design throughout the text: diagrams and paragraph and summary headings are also clearer, all of which helps to break the text into manageable “chunks” of information for the reader. The text is written in a clear and concise manner by two authors with unquestionable credentials and experience, and a particular strength of this book is the term feature within the chapters, aiding readers’ understanding of principles, a feature particularly useful for students. The book concludes with 100 pages of appendices, which can come in very handy as a teaching aid. Overall, this is an extremely useful resource that I would highly recommend.

Les Tumilty, Aberystwyth University

Advanced Fitness Assessment and Exercise Prescription (2010)
Author: Heyward, V. H.
Publisher: Human Kinetics

This is a much improved, reader-friendly edition of the popular book by Vivian Heyward. Targeted at health and fitness professionals as well as exercise physiologists, this text covers basic theory on the role of physical activity in health and chronic disease. The focus of the book is the assessment of fundamental fitness components (i.e., cardiorespiratory fitness, muscular fitness, body weight/ composition, flexibility and balance) and the prescription of exercise regimes for apparently healthy populations. Therefore, there is no reference to clinical populations or sport participants. The chapters follow a clear and logical sequence from health screening to principles of assessment, to assessment of fitness components and exercise prescription. Each fitness component is examined over two chapters. The first chapter reviews the fitness component and discusses in detail all available assessment methods, with normative data given for reference, while the second chapter outlines concepts surrounding exercise prescription for the fitness component in question and includes a very helpful question-and-answer section to guide the reader’s selection of the appropriate type of exercise. Key questions and key points/terms feature within the chapters, aiding readers’ understanding of principles, a feature particularly useful for students. The book concludes with 100 pages of appendices, which include screening forms, exertion scales, normative data tables, exercises, charts and nutritional analysis samples. The reference list is extensive and has been updated with the most recent research studies. Aside from the hardback version, it is also available in e-book format and is accompanied by a comprehensive presentation package, which can come in very handy as a teaching aid. Overall, this is an extremely useful resource that I would highly recommend.

Dr Maria Konstantaki, Buckinghamshire New University
**Functional Movement Screening**  
*Friday 18 March, 9.30am – 4.00pm*  
Coventry University  
Dr Mike Duncan, Sheila Leddington-Wright and Sam Oxford

**Applied Physiological Support for Golf**  
*Friday 25 March, 9.30am – 4.00pm*  
University of Dundee  
Helen Weavers and Dr Audrey Duncan

**The Psychology of Refereeing (Officiating)**  
*Sunday 27 March, 9.30am – 4.30pm*  
Salford Sports Village  
Dr Duncan Mascarenhas and Dr Tom Fawcett

**LabVIEW for Biomechanics**  
*Tuesday 19 April, 9.30am – 4.30pm*  
University of Chichester  
Kathleen Shorter and Dr Mike Lauder

**Physical Activity in Children**  
*Tuesday 17 May, 9.30am – 4.00pm*  
Coventry University  
Victoria Penpraze and Dr Graham Baker

**Single-case Research Methods in Sport and Exercise Psychology**  
*Tuesday 7 June, 9.30am – 4.00pm*  
Staffordshire University  
Dr Jamie Barker, Dr Paul McCarthy, Dr Stephen Mellalieu and Dr Marc Jones

*Please note that bookings close 2 weeks before the event.*

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With Dr Edwin D. Bayard
BSc (Hons), PGCE, MSc, FBASES (pending)
As I sit down to write my third column, I am struck yet again by the diversity and depth of the questions readers pose to me; and, being in a somewhat philosophical mood, this reminds me of the seasons. Not so long ago it was the warmth (sic) and light of summer; now the changing colours and weather of autumn are here, and by the time you fine readers receive my thoughts, winter will be well and truly with us.

But enough of my philosophising, for I fear I am becoming overly influenced by the increasingly rambling thoughts of Prof G., my esteemed Head of Department. I must ensure that I do not morph into one of his clones; a fate that has affected a few too many colleagues (although, it has to be said, such morphing seems to do wonders for the speed at which one can move up the hierarchical ladder and away from day-to-day student interaction).

Which brings me succinctly to the point; this issue’s question is posed by Julie, who has just entered her third and final year of undergraduate study and is after some words of wisdom on selecting her dissertation topic. Julie, I start by drawing your attention to the fine words expressed in the latest summer issue of The SES on this very topic, and from a practical perspective, I will say no more. Pondering the bigger picture, namely your motivation behind your dissertation may also be helpful in deciding where to focus your efforts. Confused? Let me explain by asking you a question: What is your motivation for doing your dissertation? At face value this may seem a somewhat strange question, but let us dig a little deeper.

If your motivation is simply ‘because I have to in order to get my degree’ then you should focus on something that is easy, foolproof, doesn’t rely too heavily on the goodwill of participants and is in an area that neither excites nor annoys your tutors; ideally, something that can be achieved by a few diligent hours in the library. You may be excited by doing something a bit more fun, risky even; this is all well and good but remember the University ethics committee are unlikely to let you test the effects of increasing amounts of duty-free vodka on participants’ ability to carry out a 3-mile running time trial, even if it is on a closed course or you offer to use a single subject design (yourself).

An alternative here, of course, is to enjoy the discomfort of others and I am reminded of the occasion whereby measuring the effect of consuming 1% of body weight in sugar (chocolate and Coke mixed together) on a participant’s blood glucose level brought on an enhanced state of sickness as well as pinpoint-like fingertips. For a few fine students, the motivation is to impress or make oneself noticed by the Prof who holds the key to that future PhD position. This has to be done carefully, for undertaking a dissertation in said Prof’s sphere of interest is excellent if all goes well, particularly if the Prof feels there is a paper in the offing. Make a mess of it, however, and you risk blighting your case.

Finally, for a few, the excitement comes in helping to solve a problem, dare I say ‘making a difference’ and a fine example of this occurred with one of my students last year. As you may recall (although I have yet to fully expand on it), I provide my services as a consultant, mainly to endurance-based athletes, one of whom is an extreme motorbike rider who approached me with a serious problem. Bob (not his real name for reasons that will soon become obvious) was in training for a 10-day endurance race in the desert, which meant there would be hot days but cold nights. He had recently, however, become inflicted by an acute bout of haemorrhoids, hence making sitting on the saddle for any length of time rather painful. This, he feared, was brought on by the adverse microclimate created as a result of sweating beneath protective leathers in the heat, followed by swift cooling and resultant damp clothing. While creams helped alleviate the problem, Bob came to me seeking assistance.

Bob became a dissertation problem, from which collaboration between two departments and two third-year students, resulted in the production of a new type of undergarment and a very satisfied client who went on to finish a credible fifth in the race with no “nether region” issues other than the odd saddle sore. More important were the two excellent dissertations and the potential for a new commercial product for the University. Julie, I cannot tell you which route to take for your dissertation, but follow the path that seems most comfortable to your ambitions.
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