TRANSLATING RESEARCH INTO PRACTICE

Discover how cutting-edge health research and collaborations are delivering meaningful impact in Sport & Exercise Medicine

This edition of BASEM Today is guest edited by members of the University of Bath's Department for Health

PLUS

BJSM CELEBRATING THE FIRST 50 YEARS

CROUCH, BIND & SET INJURY PREVENTION IN RUGBY UNION

EXERCISE & CHRONIC DISEASE

THE NEWSLETTER OF THE BRITISH ASSOCIATION OF SPORT AND EXERCISE MEDICINE
### BASEM NOTICE BOARD - FORTHCOMING MEETINGS 2014


Musculoskeletal Ultrasound Training - Level 2 - Intermediate Level 12th May, 2014 For further information and online registration please visit www.ultrasoundtraining.co.uk

22nd International Pulso Symposium - Physical Exercise in Clinical Medicine - Critical Appraisal of Randomized Controlled Trials* 24th - 26th June, 2014 - Further details available at www.pulsosymposium.org

12th Cambridge/UCLA Clinical Exercise Testing and Interpretation: A Practical Approach 10th and 11th July, 2014 Offering an early bird discount for registrations before 1st April 2014. For further information, including a course outline and booking form, please contact kate.koman@rhls.net

To be added to a mailing list and to receive a booking form for Sports Medicine Meetings and Conferences, please contact Barry Hill at: barryhll@hotmail.com

---

**Restore Tendon Function**

- Viscoelastic solution for peritendinous or intrasheath injection
- Reduce pain and improve tendon mobility in painful tendinopathy
- Enhance tendon gliding and prevent formation of adhesions

---

### Contents

- BASEM People 4
- History of BJSM 8
- Injury Prevention in Rugby Union 12
- Exercise & Chronic Disease 16
- Supporting Behaviour Change 18
- SEM - New Perspectives 20
- The Paralympic Legacy 22
- Seasonal Chat 26

---

**Gal, the Father of Sports Medicine and by all accounts a pretty hands on physician at the pitch-side of Roman gladiatorial competitions, would be proud of the progress that has been made in the care of exercising individuals. He might even feel at home at the pitch side of a modern game of rugby!**

Sports & Exercise Medicine (SEM) practitioners have emerged from a hard fought battle to become specialists in our own right and it has been rewarding to see the development of the discipline and an increased focus on our research output. We have developed much closer links with our sports science colleagues and others but how are we developing and harnessing this knowledge to its full potential?

In BASEM Today we look at how closer integration of SEM within university disciplines of physiology, psychology, biomechanics, exercise and health research, coaching and others can help push the boundaries of our knowledge. Through our experiences and the powerful research networks we have developed here at the University of Bath and in other research institutions, we demonstrate how this integration is giving us the confidence to answer the questions that challenge SEM in everyday practice.

I have been involved with the SEM course at Bath right from the start, during my days as a student, through to my role today as Clinical Director. Its key founder, Dr Malcolm Bottomley, was a powerful influence on me and many others in SEM education. He recognised the need for a basic scientific grounding and this has developed here in Bath into an integrated approach which is underpinned and bolstered by the scientific rigor of our sport and biomedical science departments.

As a parent it is a real milestone when we see our children challenging ‘parental supremacy’. The day my daughter stopped running with me because I was too slow seemed inevitable. However, when my daughter cited the neurophysiology of exercise linked to dementia and argued against my perceptions of tendinopathic changes with exercise, I realised her scientific approach really did require my full attention!

We owe it to Galen’s legacy to pass on our specialty in a scientifically fit and healthy state to the inheritors of our collective wisdom.

Dr Stuart Miller
Clinical Director
Sport and Exercise Medicine
University of Bath

---

© 2014 BASEM. No part of this publication may be reproduced by any means without prior permission from the publishers. Neither the publishers nor BASEM accepts responsibility for, nor necessarily agrees with, any views expressed, statements or opinions made within any and all news items, letters or advertisements printed in this publication.
Good in theory but if we do not teach tomorrow’s doctors about them can we really know how to apply them and put our knowledge into practice?

By Doctor Michael Dunlop

The LKADIS Malcolm Read Scholarship which enabled me to expand the above study across medical schools in England and Wales.

The aims of this study were to ascertain:

- Are final year medical students aware of the significance of physical inactivity as a risk factor to ill health?
- Are final year medical students aware of the CMOs guidelines?
- Do medical students receive teaching on the health benefits of physical activity?
- How confident are final year medical students in prescribing physical activity?

The questionnaire used in a 2011 pilot Scottish study was modulated with further questions added. All 27 Medical Schools in the UK were contacted by telephone and email, and permission was sought to deliver the questionnaire and a short presentation on the CMOs guidelines, to their final year cohort as an adjunct to a planned teaching session. Ethics approval for the study was granted by Nottingham Medical School’s Medical Research Ethics Board and additionally by the individual Universities. A posteriori, students were informed via the electronic notice board and invited to attend the questionnaire. Those who agreed to participate were sent the questionnaire which was to be completed in their own time and returned. Participants were identified by their student number. Data was processed using Microsoft Excel 2007.

All 24 of submission of this article seven University final year students participated. With the addition of the Scottish questionnaires this resulted in 277 completed questionnaires, representing on average thirty five per cent of the total year 3/4 student cohort.

Main findings were as follows:

- Are final year medical students aware of the significance of physical inactivity as a risk factor to ill health?
- How confident are final year medical students in prescribing physical activity?

The results of the current study are likely to exist in other undergraduate health professional cohorts and post graduate, all of which should continue to offer educational courses that are well attended. But this is your Association and we again need your thoughts and ideas.

In conclusion, the results of the current study conclude the current guidelines do not prepare UK medical students, and propose that the ‘New Medical Student Curriculum’ is needed to ensure all students are aware of the importance of physical activity and how to apply the information. Only through applying physical activity advice to a patient is it possible to achieve the recommended 150 minutes per week of moderate-intensity aerobic activity and also to achieve the recommended 75 minutes per week of vigorous-intensity aerobic activity. Furthermore, it is likely that there would be an increase in the number of undergraduate medical students who would welcome any replies (2013;092386).

Exercise Medicine in Wales – Our Experience of the Exercise Polypill

By Mr Bryn Savill and Dr Rhodri Martin

Wales is a prime example of a 21st century inactivating nation. The Welsh Health Survey 2012 reports that 71 percent of the population report not doing at least 10 minutes of moderate intensity physical activity on five or more days a week. Given the inaccuracy of self-reported physical activity data it’s a sobering thought that we can safely assume that the levels of inactivity are indeed far greater than these published figures. Perhaps even more concerning, is the fact that in 2007 Wales topped the European chart for percentage of children having the most unfit schoolchildren. These statistics tell a worrying story, and one that requires immediate action to rectify given the dramatic impact this will have on the health of the future population.

In the face of these depressing statistics, there is nonetheless much reason for optimism. There is an extremely proactive physical activity movement here in Wales, with individuals focused on getting the nation active. In spite of its small geographical size, Wales is very lucky to have a great deal of expertise in Exercise Medicine. This was displayed in the ‘Exercise Medicine in Wales session’ where several speakers from the leading Welsh Universities highlighted exercise related research being conducted within their respective research groups. The application of their work via enthusiasm and exercise professionals here in Wales will help drive forward this specialty both nationally and internationally.

Delegate breakdown from the Cardiff Exercise Medicine Symposium 2013:

- 31% Sport Scientists
- 26 % Students (medical, physiotherapy and sport science)
- 25% Exercise Professional (including Cardiac Rehabilitation, Fitness Instructors, Exercise Referral etc.)
- 16% Physiotherapists
- 14% Doctors
- 6% GPs

We are a small country, but one with massive potential to drive forward exercise medicine, and in particular excellence in this new specialty here in Wales. In spite of its small geographical size, Wales is very lucky to have a great deal of expertise in Exercise Medicine. This was displayed in the ‘Exercise Medicine in Wales session’ where several speakers from the leading Welsh Universities highlighted exercise related research being conducted within their respective research groups. The application of their work via enthusiasm and exercise professionals here in Wales will help drive forward this specialty both nationally and internationally.

Wales is a prime example of a 21st century inactivating nation. The Welsh Health Survey 2012 reports that 71 percent of the population report not doing at least 10 minutes of moderate intensity physical activity on five or more days a week. Given the inaccuracy of self-reported physical activity data it’s a sobering thought that we can safely assume that the levels of inactivity are indeed far greater than these published figures. Perhaps even more concerning, is the fact that in 2007 Wales topped the European chart for percentage of children having the most unfit schoolchildren. These statistics tell a worrying story, and one that requires immediate action to rectify given the dramatic impact this will have on the health of the future population.

In the face of these depressing statistics, there is nonetheless much reason for optimism. There is an extremely proactive physical activity movement here in Wales, with individuals focused on getting the nation active. In spite of its small geographical size, Wales is very lucky to have a great deal of expertise in Exercise Medicine. This was displayed in the ‘Exercise Medicine in Wales session’ where several speakers from the leading Welsh Universities highlighted exercise related research being conducted within their respective research groups. The application of their work via enthusiasm and exercise professionals here in Wales will help drive forward this specialty both nationally and internationally.

Delegate breakdown from the Cardiff Exercise Medicine Symposium 2013:

- 31% Sport Scientists
- 26% Students (medical, physiotherapy and sport science)
- 25% Exercise Professional (including Cardiac Rehabilitation, Fitness Instructors, Exercise Referral etc.)
- 16% Physiotherapists
- 14% Doctors
- 6% GPs

We are a small country, but one with massive potential to drive forward exercise medicine, and in particular excellence in this new specialty here in Wales. In spite of its small geographical size, Wales is very lucky to have a great deal of expertise in Exercise Medicine. This was displayed in the ‘Exercise Medicine in Wales session’ where several speakers from the leading Welsh Universities highlighted exercise related research being conducted within their respective research groups. The application of their work via enthusiasm and exercise professionals here in Wales will help drive forward this specialty both nationally and internationally.

In 2014 we hope to build on the strong foundations laid down at Cardiff in 2013 and we look forward to welcoming you all to Wales for the 2014 Symposium.


For full details go to: www.basem.co.uk

In Association with the Annual Meeting of the Faculty of Sports and Exercise Medicine

1st - 3rd October 2014

BASEM 2014 Conference
Edinburgh
The early copies were typed on a stencil, run through a Roneo duplicating machine, compiled and stapled on the kitchen table of Henry Robson. Henry was editor of the Journal for 20 years, steadily improving its quality and leaving a great legacy for the future.

In 1970, Volume 5 saw its name change to British Journal of Sports Medicine. It was printed by Wells and Blackwell and awarded its ISSN. In those days, Sports Medicine research was in its infancy and original research articles had to come by. Much of the Journal was devoted to Proceedings of Meetings, case histories, anecdotal experiences and BASM news. When Henry Robson retired in 1988, Peter Sperryn took over, determined to increase the clinical and research content with new publishers, Butterworth-Heinemann. Over the next 8 years he forged links with the leading Sports Medicine Associations around the World and the Federation Internationale de Medicine Sportive. He approached the World’s leading Sports Medicine practitioners and researchers and fought to gain international recognition for the Journal. He worked tirelessly to encourage Academia to produce original research and authorship, without any financial reward for himself, whilst maintaining his own clinical Consultant career. He realised that the only way to improve the standard of the Journal was to employ a paid editor who would work with an enthusiastic publisher. Thus, in 1995 Peter Sperryn and the BASM Executive approached BMJ Publishing Group with their strong background in medical publications and a 50.50 partnership was formed between BASM and the BMJ Publishing Group. Peter Sperryn retired as editor but his involvement in Sports Medicine continued and he was subsequently awarded the Sir Roger Bannister Medal for his lifetime contribution to the field of Sports Medicine.

In 2010 for his outstanding lifetime contribution to the field of Sports Medicine, Sir, in 1995 Volume 30 was born with BMJ Publishing Group. Our present publishers, and a new editor in Domhnall MacAuley who raised the scientific credibility and respectability of the Journal in his 5 years in office. The number of issues was raised from 4 to 6 per year. Domhnall moved on to do more editing in 2015 for his tremendous contributions to the development of your Journal.

By now there was International respect for the Journal and it is not surprising that the next editor came from the other side of the world. Paul McCrory, an Australian, was already a household name in Sports Medicine circles as a researcher and World Authority on head injuries and concussion. Paul held the editorial post for 7 years and doubled the number of issues to 12. He raised the bar higher still. When he took over there were 300 articles submitted per year and by 2008 there were 700 per year and the Journal was blossoming. Enter Karim Khan in 2008, also from Australia, and another world renowned Sports Medicine practitioner and author, with a passion to expand the Journal even further. He has been keen to involve the IOC and other Associations with themed issues and guest editors, and make use of information technology and the social media. The number of issues increased in 2013 to 18 (1,002 pages) plus a Supplement of 128 pages.

The accompanying photographs show how the front cover of the Journal has evolved over the last 50 years to the cover the World now recognises as BJSM. Over the last half century BASM has indeed been lucky to have a succession of outstanding hard working editors who have all made their mark with tremendous contributions to the development of your Journal.

So where are we now? This year we anticipate 22 issues in 12 mailings (partly to save postage costs) and each copy easy to carry to read on bus, train or tube or in the cafe etc. At the time of writing the BJSM is the membership journal for 15 Sport and Exercise Medicine Associations around the world including AMSSM (with 2,416 members), Sports Medicine Australia (with 1,746 members), the South African Sports Medicine Association and several European and Scandinavian Societies, some Medical, some Physiotherapy and some joint. So your published articles get a wide readership! BJSM Injury Prevention and Health Protection (IPHP) are regular themed issues of the Journal publishing research and educational articles relevant to protecting the health of professional and amateur athletes. These issues are supported by the International Olympic Committee.

The quality of a journal is often quoted by its Impact Factor which reflects the average number of times each paper is cited in a 2 year period. At the time of writing the BJSM impact factor is 3.668 which place us in 5th place in the league table of ALL of the Sport, Exercise Medicine and Science journals in the world. The 5 year impact factor at 3.985 is even better and we are in a battle for 4th place with the American Journal of Sport and Exercise Medicine, Journals which contain many Review articles are cited more often and so have a higher impact factor. That the BJSM is ranked so highly with its high proportion of original papers reflects on the high quality of the accepted papers and the excellent editorial policy. With the large number of submitted papers, the editorial board can only accept the very best even though there are many others worthy of publication (about more later).

In 2015 there were 1180 submissions from 55 countries of which 666 were original research papers. The overall acceptance rate was 31% and for original articles was 21%. The average time from acceptance to publication in print was just 3 months. The highest numbers of submissions were from the UK with 204 of which 70 were accepted, so we’re doing well! The BJSM website is thriving with up to 200,000 hits per month, of which...
approximately 28% are from the USA and 20% from the UK. A mobile-optimised version of the journal’s website was launched in June 2012 and saw 4,261 visits in the first month. November 2013 saw 21,144 unique visits to this site. The journal also takes advantage of social media; it has 12,138 followers on Twitter and 3,106 fans on Facebook. There are some excellent podcasts and a BJSM blog. These are excellent additions and a welcome extension to your education. If you haven’t taken the opportunity to look at them, I would urge you to do so. For a taster, follow Karim Khan @BJSM_BMJ on Twitter.

And where are we going? The journal still needs your high quality research and for you to submit papers for its increasing readership. Do not be put off by the apparently high rejection rates of BJSM as later in 2014 they hope to launch an Open Access companion to the BJSM called “BMJ Open Sport & Exercise Medicine”. Articles worthy of publication may be accepted for this on-line only access journal which is not restricted by print space. Articles will be Published indexed and in future may also be Web of Knowledge indexed to get an impact factor. This is a very exciting new development and members will be kept up to date with its progress. Articles published in the BJSM are free to the author as the sale of printed copies to subscribers pays for editorial, publishing and distribution costs. As any article in the Open Access companion will be free to readers, the editorial, typesetting, production and web hosting costs will incur a fee for the author. Currently this is expected to be about £1,350 but we are hoping there will be a significant discount for BASEM members. So if any of your paper writing colleagues are not members of BASEM they could be missing out on another big potential membership benefit. Get them to join now! 38 papers were accepted last year as potential Open Access articles.

‘So, from its humble beginnings on a kitchen table the BJSM has gone from strength to strength and is now a major International Journal uniting the Global Sport and Exercise Medicine Community. We owe a great debt of gratitude to all the successive editors in its first 50 years for their outstanding contributions and to BMJ Publishing Group for their dedication and support over the last 18 years.

Thank you, all of you. We look forward to the future with great anticipation.

An exciting, new one-day exercise medicine course aimed at enhancing practitioners’ knowledge and skills in delivering exercise interventions and prescription in primary care.

Saturday 31st May 2014
Venue: Holiday Inn, Stratford-Upon-Avon

Left to right: • Vol. 34, No. 4, 2000, • Vol. 39, No. 1, 2005 and • Vol. 47, No. 1, 2013, • Vol. 48, No. 3, 2014
From 2010-13 our team at Bath conducted a research project funded by the International Rugby Board (IRB) which culminated in the implementation of a global trial for a new scrum engagement process at all levels for rugby union. The impact of our work is a new international law for scrum engagement, ‘crouch, bind, set’, which was introduced globally in September 2013.

Scrum injuries

Even though not many rugby injuries occur in scrums - less than 10 per cent in fact – when they do, they can be severe, making up around 40 per cent of the catastrophic injuries players experience. As opposing sides collide together in the scrum while vying for forward momentum, players experience considerable multidirectional forces. These repeated collisions may lead to both acute and longer-term degenerative injuries, such as arthritis.

Our ‘Biomechanics of the Rugby Scrum’ project was a two-phase study of teams from schoolboy level through to elite international level, which measured the forces, pressures, accelerations and movements experienced by front row forwards under different scrum engagement techniques.

Firstly, the work confirmed the considerable multidirectional forces acting on players during the initial ‘hit’ period of impact scrummaging. This was followed by the testing of an alternative method of engagement - ‘crouch, bind, set’ – which, through our study, emerged as a technique that could markedly reduce peak forces during scrum engagement (about 25 per cent) without influencing the levels of sustained force during the pushing phase.

Whilst this technique was expected to improve scrum stability because of the opportunity for props to pre-bind with their opposition player prior to the engagement, the primary goal of the modification was to reduce both acute and longer-term degenerative injuries that players experience as a result of scrummaging. Implemented globally in September 2013, the reaction of the rugby fraternity to the new engagement process has been resoundingly positive.
Since 2011, the University of Bath has also played a critical role in promoting the development of policy in this area by conducting the Professional Rugby Injury Surveillance Project, which surveys injury risk across the Premiership and Senior England teams. The study has tracked the incidence, severity and risk factors for all rugby injuries across the professional game since 2002.

A key challenge facing the game will be the development of injury prevention and injury treatment approaches across all levels of the game that are based on a detailed understanding of risk but acknowledge the unique nature of rugby union – namely that it is a game for all shapes and sizes where a contest for possession is paramount. Communicating the subtleties of risk is not easy in a world where messages are increasingly effective when they are short and might be 140 characters or less. Welfare interventions need to be tailored to the game. The recent change in the scrum engagement sequence is a good example of the value that science can add when addressing specific questions posed by the game.

There remains a huge demand for medical support at all levels of the game. The easiest way for practitioners to enhance player welfare is to get involved in the game. This requires the practitioner to be appropriately skilled in pre-hospital sports immediate care and to have an understanding of the game but it’s typically hugely rewarding.

The Masters programmes in Sport and Exercise Medicine and Sports Physiotherapy at the University of Bath are renowned worldwide.

Our programmes enable Doctors and Physiotherapists to:

• Study part-time whilst working
• Gain a recognised specialist qualification
• Integrate learning with practice
• …and develop an evidence-based, problem-solving and clinically reasoned approach for a career in sports medicine, physiotherapy, primary and secondary care.

**Inside Rugby – View from the Top**

BASEM Today spoke to Dr Simon Kemp, Chief Medical Officer for the Rugby Football Union, to find out more about some of the injury challenges faced in the modern game and how university research can help organisations like the RFU protect player welfare.

“Before we can understand and control injury risk, we must first understand the risk.

The RFU’s Premiership and England Injured Players Foundation (IPF), focuses on improving our ‘physical literacy’ – the knowledge and understanding of injury risk that players, coaches, clubs, schools and universities need to implement injury prevention initiatives. The RFU has had a comprehensive approach to concussion management in place for some time but this has been developed significantly over the last two years.

The RFU has a number of ongoing projects that aim to develop an evidence-based understanding of the risk and management of injury in rugby union. The RFU’s Premiership and England Injury Surveillance Project has been running since 2011 and continues to provide the most comprehensive dataset of injury patterns for professional rugby players anywhere in the world. From 2012-13 the study incorporated an additional concussive event workbook to understand more about return to play practices for this important and high-profile injury.

In the 2013-14 season, the effect of players’ training loads and use of artificial turf pitches on the risk of injury in professional rugby players is being investigated.

The Community Rugby Injury Surveillance Project (CRISP) has been running since 2011 and has already delivered a comprehensive picture of the scale of the injury problem in this important rugby population. In recent seasons the data gathering has been extended to understand more about the association between functional movement and injury risk in this playing group. The study continues and the project is always looking for interested clubs (RFU levels 3-9) to come forward to participate.

The Premiership and CRISP projects have also identified the importance of reducing scrub collapses from an injury perspective, with a number of clubs identifying higher injury incidence from collapsed rather than completed scrums.

The RFU’s Premiership and England Injured Players Foundation (IPF), focuses on improving our fundamental knowledge of the magnitude of forces that the necks of rugby players are subjected to, with a view to identifying ways in which these forces can be mitigated. This project is using an exciting blend of research methods, including trials on players, impact testing of cadaveric specimens, and computer modelling techniques.

**Further developments**

The research knowledge gained from the project is now being utilised in a new collaborative research project involving the Rugby Science at Bath (RS@Bath) team, with joint funding from the RFU and the Centre for Orthopaedic Research at Bath, to investigate in more detail the biomechanical loading and injury mechanisms which occur in the cervical spine region during rugby activities.

This research study, funded by the Rugby Football Union (RFU), Injured Players Foundation (IPF), focuses on improving our fundamental knowledge of the magnitude of forces that the necks of rugby players are subjected to, with a view to identifying ways in which these forces can be mitigated.

The RFU’s Premiership and England Injured Players Foundation (IPF), focuses on improving our fundamental knowledge of the magnitude of forces that the necks of rugby players are subjected to, with a view to identifying ways in which these forces can be mitigated.

**Kaitth Stokes**

Kaitth is a Senior Lecturer in Exercise Physiology in the Department for Health at the University of Bath. His research interests include the science of rugby, muscle metabolism and function and exercise en- docrinology, which focuses on how to apply metabolic and function and exercise endocrinology, and develop an evidence-based, problem-solving and clinically reasoned approach for a career in sports medicine, physiotherapy, primary and secondary care.

**Grant Trewartha**

Grant is a Senior Lecturer in Biomechanics in the Department for Health at the University of Bath. His research focuses on the bio- mechanics of injury prevention and injury mechanisms.

Within sport this mainly relates to rugby union and endurance running, within an exercise/health context this mainly relates to trip recovery and fall prevention. His research analyses human movement patterns during high-risk actions, either directly or through modelling approaches, to develop an understanding of the loads placed on the neck and to investigate whether techniques, equipment or training interventions can modify these loads to reduce the risk of injury.

Where appropriate he incorporates other methodologies, such as epidemiological research, to inform the evidence-base for analyses. www.bath.ac.uk/health/staff/grant-trewartha

**References**


Exercise and chronic disease

We may instinctively know that regular exercise is good for us, but a new study recently published provides some of the strongest evidence yet that the reasons for this are so much more than energy balance alone.

Galen and exercise
You might be half-heartedly starting to read this article thinking that there is no need for another ‘exercise is good for you’ commentary. You might have picked up on the theme addressed in the editorial at the beginning and point out that ‘the body is in need of motion, exercise for health, rest morbid...’. Something recognized by Galen almost 2000 years ago.

Certainly, the statistics regarding the effect of physical inactivity on mortality are very impressive – physical inactivity is the fourth leading cause of global mortality and the economic burden of inactivity outs-aw at health care budget. Galen’s suspicions have been proven to be unequivocally correct.

However, before you skip to the next article, let us pause to consider the progress we have made and how this improved understanding paves the way for much better advice in terms of what physical activity people should be doing for health. We should also consider how this progress enables the development of alternative therapies based on our improved understanding for people who are unable to undertake physical activity – through injury or through illness.

Energy balance
One area that has seen enormous progress is in the field of exercise and energy balance. Over the last decade or so, there has been a prolonged debate about whether the effects of exercise are simply secondary to the role of exercise in energy balance. Many studies have combined exercise with and without calorie restriction (dieting) to try to tease apart the independent effects from exercise.

One recent paper, published in the Journal of Physiology by the team here at Bath, took a very different approach and with striking results. In this study, healthy young men reduced their physical activity to sedentary levels in order that we could observe the changes that took place and the impact of exercise.

Everyone taking part in the study was asked to overeat, but whilst half the group remained sedentary the other half exercised daily on a treadmill for 45 minutes. For energy intake, the non-exercising group increased theirs by 50 per cent, whilst the exercising group increased theirs by 50 per cent plus the energy expended in exercise. As such, the net energy surplus was the same in both groups.

Striking results
After one week, and a surplus of around 37,000 kilocalories, various measures were taken including plasma insulin responses to glucose ingestion and biopsies of adipose tissue. In the non-exercising group we found an enormous decline in their glucose control, with their fat cells overexpressing genes linked to unhealthy metabolic changes and under-expressing genes involved in a well-functioning metabolism. By contrast, the exercising group had normal blood glucose control and their fat cells remained close to normal.

A critical feature of this experiment is that we matched the energy surplus between groups – so the exercise group consumed even more energy to compensate for the energy expended in exercise. As such, the physiological mechanisms behind the results, but we can start to give evidence-based advice that will help people to ensure their long-term health.

Dr Dylan Thompson
Read our study - http://jp.physoc.org/content/399/24/6231.abstract

REFERENCES

Christmas cheer
With the release of the paper in early December, the world’s media were quick to pick up on the story and its implications for people trying to counter the effects of the ‘Christmas bug’.

From Thanksgiving to Christmas, The New York Times’ blog piece, the ‘Power of a Daily Bout of Exercise’, citing the research was one of the most read articles on the site. And of global coverage of the research from Argentina to Australia, Spain to South Korea, it’s clear there is a definite appetite to find out more about how exercise can combat the effects of overeating.

http://www.bath.ac.uk/news/2013/12/15/guilt-free-christmas/
Read the NYT blog - http://tinyurl.com/qbclerd
5-step plan for greater outcomes

**Step 1: Their agenda, not yours!**

It can be helpful to you and your patients to really understand more about where they are stuck in this process of making changes. Some patients may not be ready to increase their physical activity levels because they do not perceive it to be important (at least at this stage in their life). Others may not take action and some may be ambivalent about change. What might this mean for you? And how can they actually increase their activity?

Whilst they may listen to your advice, if they do not feel you are listening to them they are unlikely to really hear what you say and take action upon it.

So ask your patient what is holding them back from getting more active. Do they lack motivation? Are they unable to decide what changes to make? Do they need help overcoming the barriers to physical activity changes that they have decided to make? Dependent on your role in a patient’s overall care and the stage they are at in the process of change, your job may be:

- to help the patient to get motivated and refer them to physical activity programmes which will help them to achieve the desired changes;
- to help them make plans about what to change and how;
- to support the maintenance of physical activity;
- to help them to solve problems and overcome setbacks.

You are part of a care team and supporting your patient through the health behaviour change journey may require the involvement of different health professionals and with services at different stages. Fundamental to all of this is showing your patient that you are listening to their perspective.

Where to start and what to target are the first issues that you need to discuss with patients. What really matters is that your patients are the ones who decide what to discuss and what changes they want to make. Patients are much more likely to stick to plans if they have made themselves – and work out ways around the obstacles they will inevitably come across – than they are to stick to plans that they feel you have made for them.

**Step 2: Dealing with ambivalence**

Your patients will often face ambivalence when they consider change. They think of the costs, as well as the possible benefits of increasing their physical activity. It is important to explore the pros and cons with them to help identify the most important advantages and barriers that block them from taking the decision to become more active.

How can you do this?

The simplest way is to draw a vertical line down the middle of a piece of paper. Discuss the pros and cons of change with them and write them on either side of the line. You will be surprised how many things you can learn about your patient just by exploring the reasons for their ambivalence. People decide to change only when they see the advantages outweighing the disadvantages!

**Step 3: Explore importance**

How important is increasing physical activity to your patient?

You need to explore how important it is to your patient to initiate a change. One way is to just ask them ‘what would be the benefits for you of increasing your physical activity?’ Another way is to use the ‘importance ruler’, ranking from ‘not important at all’ through ‘extremely important’.

**Step 4: Explore confidence**

How confident are your patients that they can increase their physical activity?

Sometimes you might assume that your patients are reasonably confident that they can make a change. That might not always be the case. You need to explore not just their motivations, but their concerns and what barriers might prevent behaviour change being achieved.

The ‘confidence ruler’ can help reveal potential challenges and give you a clearer understanding of a patient’s drive to proceed.

**Step 5: Make a summary**

Try similar follow-up questions: “what would it take to move you just one point higher on the scale?” Getting patients to talk more positively about resources they have and small steps they could take towards their goals will help them change.

**Step 6: Make a decision**

Summarise a patient’s barriers to change and their reasons for wanting to change – then ask them a ‘turning point’ question such as, “where does that leave you?” or, “what do you think you will do?”

This invites patients to make a decision. Essentially, you are putting their situation on a plate and then serving it to them – they are passing the responsibility over to them.

This is a very good way to start the consultation to a close.

Dr Afroditi Stathi & Dr Fiona Gillison

Afroditi is the Director of Studies for the MSc in Sport and Exercise Medicine at the University of Stath and a Senior Lecturer in the Department for Health. Her major research interest is in the psychology of physical activity, identifying effective ways of supporting people in their efforts to adopt and maintain a healthy lifestyle. Her research aims to produce cost-effective methods for physical activity promotion in a range of health and community settings.

Fiona is a Chartered Health Psychologist and a Senior Lecturer in Exercise and Health Psychology at the University of Bath. Her primary research interest is in investigating how we can support people to improve their health behaviours to prevent and reduce obesity. Fiona’s work aims to enable commissioners, clinicians and exercise professionals to answer the question; “What exactly can we do to help this particular person change this particular health behaviour?”

REFERENCES:

www.basem.co.uk
New perspectives on Sports Sciences and SEM

Faced with the challenge of gaining sports science experience and exposure outside the confines of the books, researchers at the University of Bath have developed a new residential week of scientific exploration in SEM. Here, Dr Stuart Miller reports on the most recent event, held at the University in late January 2014.

Moving from a medical degree to a consultant has generally involved a spell rotating through the chosen specialty, learning the necessary clinical skills along the way and hopefully finding time for a research attachment to prove one’s credentials. As the specialties have grown, so has the depth of understanding and evidence to underpin what they do.

General practice and SEM by their nature adopt a more varied approach, with time spent in a number of specialties before a spell of supervised specialist training in the core specialty, before completing training. Within SEM the clinician can arguably come out at the other end with good clinical knowledge but lacking in the scientific concepts that underpin the full understanding of SEM. Modern day sports medicine involves an increasingly sophisticated and evidence-based practice underpinned by rapid phases of research and innovation and often sits more comfortably in a sports science lab than a consulting room.

Within exercise medicine, there is a myriad of research coming out of sports science departments, which demand our attention. How can we ignore the compelling statistics that science has thrown up in relation to exercise, health and longevity?

Over the years, the SEM course here in Bath has become increasingly integrated into a sports science department, that has itself equally embraced the partnership, allowing a synergy of development in both the teaching of SEM and also the focus of research. Scientific analysis and reflective practice has replaced more traditional ways of assessment and teaching, allowing those going through SEM rotations and others, who will ultimately use sports medicine within another specialty, to truly understand what underpins clinical practice. In turn this enables valuable insight to be gained into how we should evaluate our practice or scrutinise the scientific reading and writing, so that they are the most rewarding and valuable to our own development. I have gained a multidisciplinary approach to injury, and I’ve also had an insight into the role of allied professionals."

Dr Stuart Miller
What past participants have said:

“I am studying the MSc Sport and Exercise Medicine at the University of Bath via distance learning. So far, it has provided me with a solid grounding in sports and exercise medicine, which is refining my day-to-day clinical practice. The clinical elements of the programme are the most rewarding and valuable to my own development. I have gained a multidisciplinary approach to injury, and I’ve also had an insight into the role of allied professionals.”

Emir Battaloglu, Trauma and Orthopaedic Registrar and MSc Sport & Exercise Medicine student

This challenge to gain sports science exposure outside the confines of the books has been difficult over the years. It has led us here at Bath to develop a residential week of scientific exploration covering topics from gait analysis to physiological testing and psychological evaluation. With keynote lectures exposing students to sports nutrition, exercise interventions and behaviour change we are using this week to introduce students to jobbing scientists who can teach them how to undertake scientific reading and writing, so that they can be able to sift the real research from the ‘less robust’.

Add a few early morning sessions with elite sport coaches, teaching the basics of designing a training program for sprinters, rugby, volleyball and judo players, and finish off with a few social events to support the students as they plough their distance learning furrow complements a perfect week!

There has always been a challenge to gain enough knowledge to support clinical practice whilst still holding down a job. The distance learning aspect of the course, combined with clinical and science weeks, are one solution that we have embraced here at Bath.

Others may feel that they would prefer to spend some time a little poorer but able to concentrate on their studies without distraction. Whichever road you plan to go down my plea would be to heed the word of science. Medicine may be an art but rigorous scientific evaluation and research into what we do should underpin our specialty so as it grows these strong roots sustain us.

Dr Stuart Miller

“We get access to sessions with world-class coaching staff to start your day?!”

Nadia Vawda, GP and MSc Sport & Exercise Medicine student

The Clinical Week hones your examination skills and proves a unique opportunity to pick up ‘tricks of the trade’ from various members of the multidisciplinary team, including experienced SEM doctors, physiotherapists and osteopaths.

The Residential Weeks are great fun and incredibly helpful for discussions online afterwards. The events are jam-packed full of learning, as well as a few social opportunities. Where else can you get access to sessions with world-class coaching staff to start your day?!”

“Add a few early morning sessions with elite sport coaches, teaching the basics of designing a training program for sprinters, rugby, volleyball and judo players, and finish off with a few social events to support the students as they plough their distance learning furrow complements a perfect week! There has always been a challenge to gain enough knowledge to support clinical practice whilst still holding down a job. The distance learning aspect of the course, combined with clinical and science weeks, are one solution that we have embraced here at Bath. Others may feel that they would prefer to spend some time a little poorer but able to concentrate on their studies without distraction. Whichever road you plan to go down my plea would be to heed the word of science. Medicine may be an art but rigorous scientific evaluation and research into what we do should underpin our specialty so as it grows these strong roots sustain us.

Dr Stuart Miller

What past participants have said:

“I am studying the MSc Sport and Exercise Medicine at the University of Bath via distance learning. So far, it has provided me with a solid grounding in sports and exercise medicine, which is refining my day-to-day clinical practice. The clinical elements of the programme are the most rewarding and valuable to my own development. I have gained a multidisciplinary approach to injury, and I’ve also had an insight into the role of allied professionals.”

Emir Battaloglu, Trauma and Orthopaedic Registrar and MSc Sport & Exercise Medicine student

This challenge to gain sports science exposure outside the confines of the books has been difficult over the years. It has led us here at Bath to develop a residential week of scientific exploration covering topics from gait analysis to physiological testing and psychological evaluation. With keynote lectures exposing students to sports nutrition, exercise interventions and behaviour change we are using this week to introduce students to jobbing scientists who can teach them how to undertake scientific reading and writing, so that they can be able to sift the real research from the ‘less robust’.

Add a few early morning sessions with elite sport coaches, teaching the basics of designing a training program for sprinters, rugby, volleyball and judo players, and finish off with a few social events to support the students as they plough their distance learning furrow complements a perfect week!

There has always been a challenge to gain enough knowledge to support clinical practice whilst still holding down a job. The distance learning aspect of the course, combined with clinical and science weeks, are one solution that we have embraced here at Bath. Others may feel that they would prefer to spend some time a little poorer but able to concentrate on their studies without distraction. Whichever road you plan to go down my plea would be to heed the word of science. Medicine may be an art but rigorous scientific evaluation and research into what we do should underpin our specialty so as it grows these strong roots sustain us.

Dr Stuart Miller

What past participants have said:

“I am studying the MSc Sport and Exercise Medicine at the University of Bath via distance learning. So far, it has provided me with a solid grounding in sports and exercise medicine, which is refining my day-to-day clinical practice. The clinical elements of the programme are the most rewarding and valuable to my own development. I have gained a multidisciplinary approach to injury, and I’ve also had an insight into the role of allied professionals.”

Emir Battaloglu, Trauma and Orthopaedic Registrar and MSc Sport & Exercise Medicine student

This challenge to gain sports science exposure outside the confines of the books has been difficult over the years. It has led us here at Bath to develop a residential week of scientific exploration covering topics from gait analysis to physiological testing and psychological evaluation. With keynote lectures exposing students to sports nutrition, exercise interventions and behaviour change we are using this week to introduce students to jobbing scientists who can teach them how to undertake scientific reading and writing, so that they can be able to sift the real research from the ‘less robust’.

Add a few early morning sessions with elite sport coaches, teaching the basics of designing a training program for sprinters, rugby, volleyball and judo players, and finish off with a few social events to support the students as they plough their distance learning furrow complements a perfect week!

There has always been a challenge to gain enough knowledge to support clinical practice whilst still holding down a job. The distance learning aspect of the course, combined with clinical and science weeks, are one solution that we have embraced here at Bath. Others may feel that they would prefer to spend some time a little poorer but able to concentrate on their studies without distraction. Whichever road you plan to go down my plea would be to heed the word of science. Medicine may be an art but rigorous scientific evaluation and research into what we do should underpin our specialty so as it grows these strong roots sustain us.

Dr Stuart Miller

What past participants have said:

“I am studying the MSc Sport and Exercise Medicine at the University of Bath via distance learning. So far, it has provided me with a solid grounding in sports and exercise medicine, which is refining my day-to-day clinical practice. The clinical elements of the programme are the most rewarding and valuable to my own development. I have gained a multidisciplinary approach to injury, and I’ve also had an insight into the role of allied professionals.”

Emir Battaloglu, Trauma and Orthopaedic Registrar and MSc Sport & Exercise Medicine student

This challenge to gain sports science exposure outside the confines of the books has been difficult over the years. It has led us here at Bath to develop a residential week of scientific exploration covering topics from gait analysis to physiological testing and psychological evaluation. With keynote lectures exposing students to sports nutrition, exercise interventions and behaviour change we are using this week to introduce students to jobbing scientists who can teach them how to undertake scientific reading and writing, so that they can be able to sift the real research from the ‘less robust’.

Add a few early morning sessions with elite sport coaches, teaching the basics of designing a training program for sprinters, rugby, volleyball and judo players, and finish off with a few social events to support the students as they plough their distance learning furrow complements a
The Paralympic Legacy: Exercise Medicine for the Disabled Population

By Dr James Bilzon and Dr Stuart Miller

I n comparison to the Olympic Games and the founding of the International Olympic Committee (IOC) in 1894, the Paralympic Games and its associated governing body, the International Paralympic Committee, has enjoyed only a very recent history. In 1944, at the request of the British Government, Dr Ludwig Guttmann opened a spinal injuries centre at the Stoke Mandeville Hospital, with the primary purpose of using sport as a vehicle for the rehabilitation of the large number of war veterans and civilians who had been injured during wartime. Only 4 years later, at the 1948 London summer Olympic Games, Guttmann organised the first competition for wheelchair athletes.

An Olympic Journey

Since, the Paralympic Games has been on quite a transitional journey. The first official Paralympic Games, held in Rome in 1960, featured around 400 athletes from 23 countries, but only in wheelchair events. By 1976 the Games had grown four-fold and diversified, with nearly 1,000 athletes with different disabilities, representing 40 different countries. But, it was not until Seoul 1988 that we saw the same facilities being used to service both the Olympic and Paralympic Games. Was this the dawn of a more integrated and accepting era, both in elite sport and in society at large?

The triumph of the London 2012 Olympic and Paralympic Games would certainly suggest so. Indeed, there was a real sense pride, enthusiasm and inspiration throughout the whole period of the Olympic and Paralympic Games. This was more than just a return of the Paralympic movement to its spiritual birthplace. The Paralympic Games were exhilarating and somehow more accessible by some incredibly skilful media coverage...including the Last Leg.

It would be hard to disagree with the sentiments of the IPC President, Sir Philip Craven, who commented that the London 2012 Paralympic Games had been “unique and without doubt... the greatest Paralympic Games ever.” The global influence of the spectacle was also captured by Lord Coe, when he said we will, “never think of sport the same way and we will never think of disability the same way. The Paralympians have lifted the cloud of limitation.”

Lasting legacy?

These words largely that the London Paralympic Games should be associated with, and give rise to, a broad legacy impact outside of elite sport. It suggests that they should serve to motivate each and every one of us, regardless of circumstances, to set ambitious goals and experience the feelings of success.

There was clearly a strategic government plan for the Games to act as a stimulus to increase sports participation and physical activity levels, at least at a national level. But whilst we will not fully appreciate the impact of the London 2012 Games on sports participation for some time, history suggests some caution. The 2004 Olympic Games resulted in a reasonable increase, of around 6 per cent, in sports activity in Greece following the Athens Olympics, but this only lasted for 12 months. In the five-year period following the Athens Games, the proportion of people reporting that they exercised regularly fell by 13 per cent. This suggests a possible rebound effect following the initial fireworks.

To counter this, in November 2012, a £353 million lottery-funded drive was announced in Britain to encourage mass participation in sport on the back of the London Games. The Olympics Minister, Hugh Robertson, had said tackling the poor state of sports facilities across the country was a top priority. A nationwide campaign to offer teenagers and young adults six weeks of coaching in the sport of their choice was also announced. From a disciplinary perspective, government backing for the development of the National Centre for Sport & Exercise Medicine appears to have been a positive step, particularly in terms of devising the evidence-base around the exercise medicine and health agenda.

Paralympic futures

The question remains however, what specifically has been done to ensure a Paralympic legacy impact on sport and physical activity participation for individuals with disabilities? Furthermore, what evidence is there that disabled individuals accrue the same health and physical activity participation for disabled individuals; and exercise-based treatments for the prevention of chronic disease, spinal cord injury giving rise to a 60 per cent increased risk of cardiovascular disease and a four-fold higher risk of developing diabetes there are important societal cost implications too.

As this important national initiative looks here at the University, we look forward to working closely with the wider sports medicine and disability community to improve research and treatments to ensure a lasting Paralympic legacy.

Find out more about DASH and our work www.bath.ac.uk/health/research/sport-health-exercise-science/disability-sport-health

Facilities building research into disability sport and health at the University of Bath

The London 2012 Paralympic Games had been, “unique and without doubt... the greatest Paralympic Games ever.” The global influence of the spectacle was also captured by Lord Coe, when he said we will, “never think of sport the same way and we will never think of disability the same way. The Paralympians have lifted the cloud of limitation.”

There ought to be something very special about the boundary conditions of the universe, and what can be more special than that there is no boundary...

And there should be no boundary to human endeavour.”

Professor Stephen Hawking, Opening Ceremony

“unique and without doubt... the greatest Paralympic Games ever.”

The London 2012 Paralympic Games had been, “unique and without doubt... the greatest Paralympic Games ever.” The global influence of the spectacle was also captured by Lord Coe, when he said we will, “never think of sport the same way and we will never think of disability the same way. The Paralympians have lifted the cloud of limitation.”

There ought to be something very special about the boundary conditions of the universe, and what can be more special than that there is no boundary...

And there should be no boundary to human endeavour.”

Professor Stephen Hawking, Opening Ceremony

The London 2012 Paralympic Games had been, “unique and without doubt... the greatest Paralympic Games ever.” The global influence of the spectacle was also captured by Lord Coe, when he said we will, “never think of sport the same way and we will never think of disability the same way. The Paralympians have lifted the cloud of limitation.”

There ought to be something very special about the boundary conditions of the universe, and what can be more special than that there is no boundary...

And there should be no boundary to human endeavour.”

Professor Stephen Hawking, Opening Ceremony

The London 2012 Paralympic Games had been, “unique and without doubt... the greatest Paralympic Games ever.” The global influence of the spectacle was also captured by Lord Coe, when he said we will, “never think of sport the same way and we will never think of disability the same way. The Paralympians have lifted the cloud of limitation.”

There ought to be something very special about the boundary conditions of the universe, and what can be more special than that there is no boundary...

And there should be no boundary to human endeavour.”

Professor Stephen Hawking, Opening Ceremony

The London 2012 Paralympic Games had been, “unique and without doubt... the greatest Paralympic Games ever.” The global influence of the spectacle was also captured by Lord Coe, when he said we will, “never think of sport the same way and we will never think of disability the same way. The Paralympians have lifted the cloud of limitation.”

There ought to be something very special about the boundary conditions of the universe, and what can be more special than that there is no boundary...

And there should be no boundary to human endeavour.”

Professor Stephen Hawking, Opening Ceremony
A World Class Imaging Service Designed For Elite Athletes

• The premier 3T MRI diagnostic facility in Central London
• A daily clinic lead by a specialist musculoskeletal Consultant Radiologist

For more information visit:
www.nuada-medical.co.uk
or call us on: 0207 036 8800
45 Queen Anne Street, London, W1G 9JF
A SEASONAL CHAT WITH DR MIKE BURDON
MBBS, MCOSEM, MSc, MFISEM(UK), CONSULTANT IN SPORTS AND EXERCISE MEDICINE

01. What first interested you in Sports Medicine?
I grew up as one of 3 brothers on a diet of football and cricket so I have always been interested in sport, playing centre forward during my time at Uni. After I qualified as a GP, I covered some local professional football matches and this led me to study and gain the diploma in SEM. I then later decided to make it my full time career and obtained a MSc and recently awarded CESR to become a specialist in SEM.

02. How and when did you get your current job?
I currently work for the MoD in the South West Regional rehabilitation and sports injury clinic in Plymouth as the clinical lead. I started there as a part-time locum in 2008 and obtained a substantive post in 2011 for 52 hours a week after interview. I do an odd GP shift as sessional GP and am now setting up a private SEM clinic in Plymouth.

03. What is the best part of your job?
Telling young Royal Marines that they have OA and need to restrict activity or think of alternative careers.

04. What do you do to relax?
I reduce stress by doing gym-based activity but for real relaxation I like to sing and listen to music—mainly choral or classical.

05. What is your favourite City in the world and why?
Out of Africa

06. What is your own personal sporting highlight?
I ran a 32 mile ultramarathon across Dartmoor in 2004 in 5 hours 20 mins, a week after my PB in a half marathon—1h 29 min. (Can I have both as a week apart?)

07. What are the 5 things you could least do without and why?

a. Mrs B—she is so supportive especially when I worked hard to gain my CESR and change careers. Her sense of calm helps me greatly and of course her beauty.
b. My 3 children, George, James and Grace. They remind me what is important in life.
c. My Faith as a catholic.
d. My iphone and ipad—I am an addict.
e. Music. The world would be so dull.

08. What would be your top five desert island CDs or DVDs?

a. “Albinoni’s adagio”. The most beautiful piece of music I have ever heard.
e. A DVD of Michael Mcintyre. He is truly hilarious and original and doesn’t resort to swearing or offensive jokes to be funny. A true talent.

09. If you could meet any historical figure (alive or dead) whom would that be and why?
David Attenborough. My family and I are very interested in wildlife and have been to Costa Rica twice to spend time in the jungle. I think he is THE voice of natural history with an incredible career and dedication to his area of expertise. He is a national institution. Sharing a bottle of red wine with him would be amazing (Finest Rioja).

10. Would you like a second career and what would it be?
I inherited my musical genes from my mum and I love singing—I sing tenor in our cathedral choir. I would love to train at the Royal Academy of Music and be a professional singer especially operatic. But for me it’s a great hobby and something I can continue to enjoy throughout life.

11. What are your aspirations for your professional future?
At present I am happy working for the MoD. I am about to start private clinics now I have my CESR and my wish of course is for this to become a great success. I hope to bring SEM to the region in a more expanded way than it currently exists. There is no NHS post here but I plan to raise awareness of exercise and its benefits to health. I am currently working for England Hockey on a tour in India and hope that Dr Mike Rossiter (CMO) may invite me again as I have found the squad a real pleasure to work with.

Jenny Turner’s question:
What is your own personal sporting highlight?
I ran a 32 mile ultramarathon across Dartmoor in 2004 in 5 hours 20 mins, a week after my PB in a half marathon—1h 29 min. (Can I have both as a week apart?)

What question would you like to ask our next Seasonal Guest?
What is your favourite City in the world and why?

www.basem.co.uk

KICK START YOUR SEM CAREER

BASEM EDUCATION
Foundation Course in Sport and Exercise Medicine

Lilleshall National Sports Centre, Shropshire, 1st-4th June 2014

A three and a half day residential foundation course aimed at providing a thorough grounding in the areas that make up SEM.

15% DISCOUNT FOR BASEM MEMBERS

Specific lectures will include:
Anatomy, pathologies and practical examinations of the foot, ankle, knee, shoulder & spine
Exercise physiology
Nutrition and fluid balance in sport
Sport and doping
Practical rehab
Event Medicine

Enjoy a unique SEM networking opportunity with other professionals in beautiful surroundings

BOOK NOW AT: www.basem.co.uk
Need Flexibility?
Work and learn with our one year, part-time, online Postgraduate Diploma / MSc in Sports and Exercise Medicine

www.diploma-msc.com