PostScript

LETTER

Heat stroke and 10K "fun runs": new safety measures are called for

On Sunday 11 June 2006, 8000 people undertook a "fun run" in Hyde Park, the BUPA Capital 10K. During the course of the afternoon, St Mary's Hospital emergency department received four, and another local hospital received three, collapsed adult runners.

All collapsed at 7-10 km, were confused, and showed signs of severe heat stroke (with core temperatures of 40-41°C). Three patients required intubation, and three required sedation and high dependency unit care. One patient was admitted to the intensive care unit for 72 hours. Happily all survived, but there are some important lessons to be learnt for future similar events.

No official temperatures were recorded at the scene, but reports varied from 30 to 33°C with a high humidity.

Australia and America have experience in organising events for amateur athletes in high temperatures, and guidance from these countries is available. A consensus document in 1984¹ suggested that we should use the American College of Sports Medicine (ACSM) guidelines for events of 16 km or over. These rely on temperatures recorded at the scene and the use of a wet bulb globe temperature (WBGT) in humid conditions.

The WBGT is a way of assessing risk of heat illness. It is a method of combining temperature and humidity in a single number using a thermometer with three bulbs.²

On humid days in Australia or America, under their guidelines, a WBGT of above 30°C may lead to postponement of the event to a cooler part of the day or to cancellation. A WBGT of 26-29°C would result in limiting continuous exercise to 60 minutes. On less humid days, ambient temperatures of 31-35°C would also lead to a limit on exercise, and a temperature of 36°C and above would lead to postponement or cancellation of the event.³

When interviewed after they had recovered, it was clear that these runners had little knowledge or experience of running in the heat. None had received or read any advice on exercising in the heat or on optimising hydration.

None of the runners had identification on them or details of next of kin. It took several hours for their anxious relatives to find them, as they were not able to identify themselves because of their confusion.

Participants in races of this nature are predominantly amateur with limited understanding of the risk of heat stroke and its preventive measures. Organisers of such events must be aware of this and ensure that a full risk assessment of the event is carried out, which must include temperature readings.

Events such as the London Marathon have clear guidelines and also send out information to runners. Heat stroke carries significant mortality and has now been shown to be

a real risk in events of 10 km in the United Kingdom. We would like to suggest the following measures for all fun runs.

- ACSM guidelines regarding WBGT should be applied.
- Each runner should be sent an advice sheet including advice on running in the heat and how to achieve optimal hydration.
- Each runner should be instructed to write their name, next of kin, and someone to contact on the day on the back of their race number.

A J Sanders, J Redhead

St Mary's Hospital, London W2 1NY, UK

Correspondence to: Dr Sanders, St Mary's Hospital, London W2 1NY, UK; alisanders@btinternet.com

doi: 10.1136/bjism.2006.030338

Competing interests: none declared

References

- 1 **Recommendations of a consensus conference.** Popular marathons, half marathons, and other long distance runs: recommendations for medical support. *BMJ* 1984;**288**:1355-9.
- 2 **Gardner JW, Kark JA, Karnei K.** Risk factors predicting exertional heat illness in Marine Corps recruits. *Med Sci Sports Exerc* 1996;**28**:939-44.
- 3 **Australian Sports Medicine Federation.** South Australian Branch. Revised hot weather guidance, November, 2005. www.sma.org.au/pdffdocuments/Hot_Weather_Guidelines.pdf (accessed 21 Aug 2006).

BOOK REVIEWS

Human physiology: the basis of medicine

Edited by Gillian Pocock, Christopher D Richards. Published by Oxford University Press, 2004, softcover, £35.00 (paperback) £69.95 (hardback), pp 714. ISBN 0198585276

For a simply written introduction to physiology, this addition to the *Oxford core texts* covers a lot of ground. It takes the reader from virtual biological ignorance to an appreciation of the workings of life, particularly as they relate to the human model. *Human physiology* then goes further using physiological norms to explain pathological conditions as the due consequence of failure of the main body systems to function in their normal or regular way.

The text is intended for pre-clinical students in medicine and other health related professions including nursing, physiotherapy, and exercise physiology. Following the tradition of Oxford University Press and Samson Wright's *Textbook of applied physiology*, the book is instructive as well as facilitative.

The authors are very experienced teachers and obviously understand students' needs. It is pleasing to find that there are still some academics who appreciate that instruction of

the next generation ranks with research in importance.

The user friendly format accords with the current method of problem based learning. The text is readily appreciated as a whole and is easy to read from cover to cover. However, this does not preclude its use as a reference. Each of the 31 chapters starts by listing learning objectives that the student should achieve. Throughout the text there are summaries or take away messages. Most chapters conclude with a number of true or false questions with answers and a short explanation of the answer provided.

As is the manner of most physiology text books, the authors subsume information under various systems, but they help to consolidate knowledge by integration with liberal cross referencing throughout each chapter.

There is some variance in the information level of the different chapters. Cardiovascular, respiratory, digestive, and renal systems are predictably well covered. The concept of homeostasis and the body's ways of maintaining a consistent internal environment is always the pervading theme.

Neurophysiology is covered in more detail than might be expected in a general introductory textbook. There are separate chapters for the motor systems and sensory systems, the latter covering not only sight, hearing, taste, and smell, but the somatic sensations of touch, temperature, vibration, itch, and pain are also all well explained.

Excellent illustrations, diagrams, and flow charts abound. They are all relevant and placed proximal to the corresponding text. Photos of patients showing the typical clinical presentations of nutritional and hormone deficiency disorders are a reminder of the rarity of these conditions in developed countries in the 21st century.

Although this is a personal viewpoint, I was sorry to find in a British textbook that adrenaline has become epinephrine and haemoglobin has lost its diphthong. Still ECG is continued rather than EKG.

Rating

• Presentation	18/20
• Comprehensiveness	16/20
• Readability	18/20
• Relevance	16/20
• Evidence basis	20/20
• Total	88/100

V Higgins

Brain and body in sport and exercise

Edited by Boria Blumenstein, Michael Bar-Eli, Gershon Tenenbaum. Published by John Wiley and Sons, 2002, £19.99, softcover, pp 133. ISBN 0471499072

Don't be fooled by the initial title of a book. With Professor Noakes and his research team challenging the traditional model of peripheral fatigue in exercise, I was interested in

how this book, *Brain and body in sport and exercise*, would complement his work. Unfortunately I came away a little disappointed, as it was a book that reviewed the science and application of biofeedback techniques, and, as such, was aimed predominantly at sports psychologists.

Nevertheless even a sceptical heathen such as a sports physician was able to extract some useful concepts and ideas to potentially take into clinical practice—for example, in my specific interest, tennis, a sport in which biofeedback could have a role to play in performance.

The editors seemed to have a legitimate right to publish this book, writing a number of the chapters themselves, and, throughout, many of the quoted references were theirs.

After labouring through some of the early theoretical chapters, I wanted to see how easy biofeedback was to apply in practice. The Wingate five step approach was described in some detail, and it seemed it could take over 60 hours of training to implement. The take home message is that biofeedback is not a quick fix for poor athletic performance!

At the non-elite level, one chapter tried to revive interest in biofeedback in exercise psychology, namely how to allow recreational exercisers to maintain a decent stimulatory level of exercise without pushing too hard and creating an aversion to future exercise bouts. This work takes on added importance in the context of our current sedentary population, who all too readily abandon a new exercise regimen within a few weeks of starting.

Overall this book would be useful for sports psychologists in particular, but high level coaches and other practitioners may be surprised at the potential of biofeedback in their athletes.

Rating

● Presentation	11/20
● Comprehensiveness	14/20
● Readability	11/20
● Relevance	13/20
● Evidence basis	15/20
● Total	64/100

T Wood

Football medicine, revised edn

Edited by Jan Ekstrand, Jon Karlsson, Alan Hodson. Published by Taylor & Francis, 2003, £32.50, hardcover, pp 562. ISBN 1841841641

What is the difference between a well intentioned, but, in truth, mediocre manual and a treasured tome of great utility to the reader? Is it too sweeping to suggest that the premier book is (a) correct, (b) clear, (c) concise, (d) contemporary, (e) carefully constructed, (f) clinically relevant, and (g) copiously illustrated in colour?

Sweden's frontline of soccer/football doctors, Jan Ekstrand and Jon Karlsson, together with England's Alan Hodson, display all The 7 Habits of Highly Effective Penmen in the English version of their already classic book, *Football medicine*. The Swedish version jumped off the shelves in Stockholm, Goteborg, and

Umea faster than David Beckham's Real Madrid shirts; the publishers have now scored with the English version for the bilingual markets of Manchester, Munich, and Montevideo.

In the days when Britain ruled the waves, the jaded, aging, reviewer would have clichéd this book as the *Bible of football medicine*. While quite a compliment, in today's warming globe, when *Bibles* are worshipped less than plasma TVs and SUVs, jaded, aging reviewer thinks that *Football medicine* is headed to be the iPod of football books. This book is innovative, elegant, transportable, and great value for money.

What is striking about *Football medicine* is its combination of evidence based prevention, diagnosis, treatment, and rehabilitation information in a clinically useful and readily accessible form. The first half sees a very well constructed build up, with the latest in sports physiotherapy, orthopaedics, and general medicine that is relevant to football/soccer. The authors ensure that the reader is not trapped offside, as healing strategies are outlined with the aid of full colour artwork and photographs that are both educative and aesthetically pleasing. The scientific evidence is set up for the reader with very clear, crisp graphs. Highlights of the second half include the major innovations in concussion, anterior cruciate ligand (ACL) injury prevention, groin pain, and core stability; there are many practical examples of functional rehabilitation, most useful for physiotherapists and sports trainers.

A clear winner, this book does not require the reader to go into extra time to find answers. It actually provides valuable sports medicine advice that extends well beyond the football arena—it is also valuable for clinicians treating a wide range of sports men and women. I commend the authors greatly on the English language version of *Football medicine*—much more than just a football book!

Rating

● Presentation	19/20
● Comprehensiveness	18/20
● Readability	19/20
● Relevance	20/20
● Evidence basis	15/20
● Total	91/100

K Khan

Sports neuropsychology

Edited by Ruben J Echemendia. Published by The Guildford Press, 2006, £30.87, pp 324, hardcover. ISBN 1572300787

That the discipline of clinical neuropsychology has come of age is well demonstrated in the text *Sports Neuropsychology* edited by Echemendia. This book integrates much of the 20 year history of the role of neuropsychology in sports, the current state of play, and future directions. It provides an overview of the integral role of the neuropsychologist in contributing to assessment and management of concussion, return to play decisions, research design, and individual athlete support. One might argue that this is unsurprising given that the book's contributors are

predominantly neuropsychologists. The value of neuropsychology in the diagnosis and management of sports concussion is, however, supported by later chapters written by other members of the sports medicine team.

This text is primarily designed as an introduction to sports neuropsychology and a resource tool for neuropsychologists and psychologists involved in the diagnosis and management of sports related concussion. I feel this book has broader application and will be both interesting and useful to the range of clinicians, sports trainers, and coaches who need to understand and contribute to the management of sports concussion at both the individual and team policy level.

The book follows a logical progression, beginning with a section designed to put the role of the sports neuropsychologist in context. This section describes the history of neuropsychological assessment in sports from the early 1980s to the present and includes a chapter on the rewards and pitfalls of working with athletes. As an experienced neuropsychologist I found this latter section a little condescending. It suggests we should avoid the urge to ask for an athlete's autograph! I should have thought such behaviours would be clearly governed by the ethical standards of psychologists. However, other more complex and useful ethical issues are addressed, including dealing with the media and managing lines of communication within sports organisations.

Section II addresses definitions and the assessment of concussion in sports and return to play guidelines. This is followed by a section on concussion surveillance and management programs for athletes at various levels. These include junior school athletes through to high school, college, and the professional athlete. In each case, the authors try to provide a hands-on approach to setting up programs based on experience. This includes the pitfalls, the importance of pre-season assessment, and assessment tools.

I particularly enjoyed the following section on computerised neuropsychological batteries. The development and use of computerised batteries has grown over recent years in response to the need for time efficient and reliable indices of cognitive change. These are useful in the serial assessment of the athlete. This section gives interested readers the opportunity to gain an overview of the nature of available batteries and make comparisons. The book is completed with a section written by other members of the sports medicine team, for example physicians, who provide an insight into their view of the role of the neuropsychologist in understanding and managing concussion.

The book has a very North American view of the world. This is understandable given the backgrounds and vast experience of many of the contributors, which revolves largely around American football. A broader view may have been achieved with discussion of other early sports concussion data. For example, Australian Rules Football concussion data published in the mid 1990s contributed to the understanding of the importance of assessment of sports specific recent memory. This material, often referred to as the Maddock's questions, has been adapted internationally and is used routinely by the likes of the British Jockey Club. (There is my very Australian view of the world!). I would also have liked to have seen a chapter exploring the role of neuropsychology in