Mandatory wearing of helmets for elite cyclists: new perspectives in prevention of head injuries

Cycling related injuries, especially those to the head, are common causes of morbidity, death, and disability and could largely be prevented by the proper use of hard shell helmets. Unfortunately, obvious evidence is often not acknowledged, and the use of such a valuable preventive measure has been too long ignored. Media coverage of elite competitions, showing most athletes racing without helmets, has unfortunately influenced amateur and young cyclists for a long time. However, owing to the progressive increase in severe and fatal injuries, especially involving elite cyclists, and the evidence that the outcome of most of these tragedies might have been prevented, the International Cycling Union announced that, from 5 May 2003, it is mandatory to wear a hard shell helmet in elite men’s events for classes 4 and above. This decision was taken in agreement with the Professional Riders Association, who supported the initiative despite some internal differences of opinion. Images transmitted worldwide during the 2003 Tour de France, a sporting event second in popularity only to the Olympics, strongly encouraging, showed all athletes wearing helmets throughout most of the race. This is a valuable message for both amateur cyclists and adolescents, as awareness is often more productive than restrictive measures. In addition, individual persuasion to wear helmets does not have the side effect of reducing the incentive to do cycling. Less cycling, in reaction to restrictive legislation, of reducing the incentive to do cycling. Less cycling, in reaction to restrictive legislation, may counterbalance the beneficial effects on head injury prevention, as regular recreational aerobic activity, such as cycling, has manifest benefits on health, preventing the development of chronic disorders, including atherosclerosis, diabetes, osteoporosis, obesity, depression, and cancer.

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References


Upper body contribution to high intensity cycle ergometer exercise: implications for blood lactate measurements and power profiles

We read with interest the article by Hunter et al.1 We would like to elaborate a little on the measurement of high intensity exercise and in doing so identify possible factors that may have contributed to the conclusions drawn. We recently investigated the upper body contribution to high intensity exercise performance.7 The purpose of the study was to examine the upper body contribution through a handgrip to power profiles and blood lactate concentrations during high intensity cycle ergometry. Nine trained male subjects each completed a 20 second, high intensity cycle ergometer test twice, in a random order, using two protocols, with a handgrip (WG) and without a handgrip (WOHG). Capillary (ear lobe) blood samples were obtained before and after exercise. Blood samples were corrected for changes in plasma volume recorded for the WG protocol. Mean (SEM) blood lactate concentrations recorded after the three conditions were 0.98 (0.33), 5.68 (0.46), and 9.14 (0.38) mmol/l respectively. During the WOHG protocol, blood lactate concentrations recorded were 0.99 (0.26), 5.58 (0.58), and 7.62 (0.65) mmol/l respectively. Differences were found (p<0.05) from rest to four minutes after exercise for both groups. Differences in concentrations were also observed between the groups at four minutes after exercise. Peak power output recorded using the WG protocol was also greater (1461 (94) v 1136 (88) W, p<0.05). No differences were recorded for mean power output, fatigue index, or work done. We also recorded the wave electromyography of the forearm musculature while performing both of the two protocols.7 During the with grip ergometer tests, the intensity of the electrical activity in the forearm musculature was greater than the intensity of electrical activity recorded for the forearm musculature during 100% maximum voluntary handgrip dynamometer contractions, suggesting maximum isometric-type contraction during the “with grip” leg high intensity cycle ergometer tests. The findings of both studies indicate significant differences in power output and blood lactate concentrations between protocols. These findings suggest that the performance of traditional style leg cycle ergometer tests requires a muscular contribution from the whole body. Also, the upper body contribution may influence fatigue profiles of the lower limbs during this type of activity. Therefore, researchers should consider this, both in terms of the allocation of ergometer loads, and in the analysis of blood borne metabolites.

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References


Clinical governance is unworkable

In your editorial on clinical governance, you cited “fragmented…evaluation” and “lack of…benchmarks of quality of care…which…improves…improvements in patient care.” If improvement in patient care is impaired, clinical governance is conceptually moribund.

Clinical diagnosis consists of evaluating patients’ maladies— “[A]t the heart of [clinical governance] is the desire to evaluate the quality of medical practice against agreed standards”—and thus entails an analogy between clinical evaluation of patients and performance evaluation of physicians. The clinical biochemical literature identified a deficit that renders analogy false: “…total quality management (TQM) in laboratory medicine [requires]…that objective quality goals must be clearly defined a priori…”

Obviously, an evaluator can compare care he examines with quality benchmarks in either laboratory or clinical medicine only if he has a clear, a priori, definition of quality of care in mind. Mechanistic goals of laboratory medicine may be amenable to a priori definition, but the more subjective, viewpoint dependent goals of clinical medicine are not, as Steffen inadvertently demonstrated as he sank into a conceptual quagmire in his attempt to define quality of medical care.

Another logical bind little noted in the medical literature is that performance evaluation of individuals is counterproductive of Continuous Quality Improvement (CQI/TQM), because it instills fear and erodes morale,” so clinical governance, reliant on CQI, is likewise incompatible with it. Deming implemented CQI by substituting leadership for performance evaluation. Leadership, unlike performance evaluation, is compatible with collegial principles governing professional development in medicine.

Besides, the clinical assessor too often errs because of the customary procedure in medical peer review: without having examined the patient in question, he relies on the relevant clinical chart alone in his attempt to evaluate a physician’s performance.

Accordingly, it is small wonder that “there is…little published evidence that clinical governance makes any…difference.” The foregoing fundamental internal contradictions render clinical governance unworkable.


BOOK REVIEWS

Textbook of sports medicine


I have long been impressed by the Scandinavian contribution to sports medicine and exercise science. Therefore a textbook that is the product of leading Scandinavian authors is eagerly awaited. This one does not disappoint. It should appeal to both sports scientists and clinicians.

The first section of the book is devoted to basic science—exercise physiology, biomechanics, and tissue repair processes. The chapters are well written and up to date, but, as a clinician, I found the information was not as well presented as in Wilmore and Costill, which for me remains the benchmark for presentation style.

The second section deals with aspects of human performance and is both detailed and accurate. In the chapter on training there is appropriate mention of the work of major contributors such as Eric Newsholme and Laurel McKinnon. In the section on altitude training, there is discussion of the live high, train low concept, which is the product of relatively recent research. This demonstrates the contemporary nature of this text.

Moving on, there are well written contributions on exercise in acute and chronic disease states. Some of the major pioneering research on osteoarthritis and sports participation was done in Finland, and this work is given due mention in the textbook. There is a 25 page chapter on imaging of sports injuries, which provides a good review of the strengths and weaknesses of the various imaging modalities. The images and diagrams that accompany the text are well chosen.

For sports physicians, the bulk of clinical work involves injury diagnosis and treatment, which occupies the final 250 pages of the book. Here the content is mixed. There is a good description of common and less common causes of leg pain—for example, popliteal artery entrapment. However, tendinopathy is not mentioned as such in this section of the book—rather the term tendinosis is used. Alfredson’s concentric then eccentric strengthening regimen is mentioned, but no specifics are given, such as appears in the textbook of Brukner and Khan. There are only two paragraphs devoted specifically to diagnosis and treatment of stress fracture of the navicular, which is a bit light in a textbook of this size. Sadly, there is no mention of the Vienna conference consensus on concussion held in 2002.

In summary, this is a useful textbook that successfully combines sports science and medicine into a unified body of work. Its strength is the close linkage and reference to original research (each chapter starts with a reference to a classic paper). Its weakness is that, for clinicians, more detail on diagnosis and management of certain injuries would be required for those wanting a text to consult for specific advice.

It’s a very good book, but in my view Brukner and Khan remains a better text for clinicians.

Analysis

Presentation 14/20
Comprehensiveness 17/20
Readability 15/20
Relevance 18/20
Evidence basis 19/20
Total 83/100

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Essentials of sports nutrition, second edition


The author summarises the aim of this book in his preface as “to give a scientific but easily understandable overview of aspects related to nutrition and physical activity”, and it does just that.

Having published numerous scientific studies himself, this well respected author, Brouns, is certainly qualified to write such a text. This, together with the panel of internationally recognised experts acknowledged as having critically reviewed the manuscript, ensures that this book is a highly credible source of sports nutrition information.

As expected in a sports nutrition book, this book logically summarises the macro and micro nutrients, with chapters dedicated to each of carbohydrate, fat, protein, fluid, minerals, trace elements, vitamins, and antioxidants. Each chapter provides a detailed overview of the research relating to the topic. The key points at the conclusion of each chapter provide a simple summary without the detail and research for those just wanting the bottom line.

With almost 500 scientific references provided to support the facts, it really is a scientific reference book. It is therefore easy to understand why this book is used as an educational text in graduate courses of sports science, physical education, and sports medicine, in several countries.

Although this book is certainly not targeted towards the sports person or athlete wanting to learn how to meet their nutritional requirements, some practical information could have easily been incorporated. In my opinion this is the only “essential” ingredient lacking. There is a chapter dedicated to “From theory to practice”; however, this is more of a summary of the scientific facts. There are some guidelines relating to “what to do”—that is, nutritional requirements. However the “how to” component is lacking. Additional tips and strategies for applying the facts would complement this book and perhaps extend its use.

Overall, Essentials of sports nutrition is a very useful addition to any sports nutrition library.
Musculoskeletal injection skills


Musculoskeletal injection skills was written primarily by British physiotherapists for a graduate educational programme or physiotherapists who perform soft tissue therapeutic injections. The secondary audience for this book, according to the authors, is general practitioners. As is true for all books, this one has difficulty being all things to all readers.

At first glance, the book is very appealing. Colourful photographs demonstrate positioning and injection sites for dozens of soft tissue, tendon, and bursa injections, accompanied by sketches of the underlying anatomy and needle trajectory. There are frequent clinical tips and “pearls” as well as detailed lists of equipment required.

These advantageous features, however, are exactly what make this book less valuable for the reader with significant experience with musculoskeletal injections. The first four chapters cover very basic information, such as basic pharmacology, needle sizes and colours, and no touch sterile procedure, which is probably useful for physiotherapists but not for experienced doctors.

On the other hand, there are injections described, such as the hip joint (intra-articular) or the iliopsoas bursa, which are unlikely to be performed by primary care doctors, or by most sports physicians for that matter, without radiological guidance. Other injections are for conditions for which there is controversy (at best) about the injection’s value, such as lateral epicondylitis, but the book merely hints at the lack of data and does not fully address the issue.

Although the production value of the book is high, it is difficult to recommend it wholeheartedly to any group. It is somewhat helpful for family and general doctors, although it is probably both too basic and too complex at the same time. It might be a useful introductory text for doctors training in sports medicine, but would lose its value as the practitioner’s experience increased.

Analysis

Presentation 16/20
Comprehensiveness 15/20
Readability 17/20
Relevance 18/20
Evidence basis 8/20
Total 81/100

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The female athlete


This book is a very informative source, both from a practical point of view with its sports medicine content, and also from an educational angle with information on the psycho-social aspects of the female athlete, which are very relevant and are not often included in general sports medicine texts.

The book presents sex differences in injury occurrence and gives effective advice on prevention and injury management. It is targeted mainly at sports medicine professionals, but also significant sections are relevant to coaches, trainers, administrators, and, in some part, the athletes themselves and their families.

The organisation is logical, with the content divided into sections including firstly historical, psychosocial, and performance issues followed by chapters on female specific and general medical conditions, and finally sections dealing with orthopaedic, rehabilitation, and sport specific conditions. The chapters are well written and easy to read, with a considerable level of research literature and statistical data discussed within most. The presentation of the text is clear with good use of tables, figures, and other visual representation of information.

The initial section gives a good historical background to female sports participation and explores psychosocial and performance issues and how they relate to the athlete and those working with her. This is important in knowing how to create a successful working relationship by understanding the subtle differences in dealing with female rather than male athletes. This is particularly well explained. There could be more information included here, for example on race, class, and sexuality as such subjects are rarely broached explained. There could be more information included here, for example on race, class, and sexuality as such subjects are rarely broached.

The following section covers in great detail problems associated with nutrition, menstrual dysfunctions, and other obstetric and gynaecological issues including pregnancy as well as general medical conditions. Despite some repetition of information, there are very good chapters covering the female athlete triad and the sequelae of disordered eating, with pragmatic advice on recognising symptoms of these conditions. The chapters on the physically challenged athlete supplies detailed information on some of the unique problems faced by this group of sportswomen, about which there is very little written and will considerably enhance the knowledge of the non-expert reader.

The orthopaedic section includes all the major injuries usually seen, with relevant female specific information and advice. The chapters on stress fractures, knee, and shoulder injuries are particularly clearly written and presented. There could be a greater contribution, where appropriate, from relevant sports rehabilitation specialists to discuss the specifics of certain aspects of treatment in addition to the surgical or bracing procedures. For example, the foot and ankle chapter could be expanded with the views of a podiatrist on both assessment and management.

The following section on rehabilitation provides a general approach, giving advice on sport specific rehabilitation programmes, upper and lower limb rehabilitation, strength training and evaluation, and proprioception. Some parts of this section are excellent, with detailed practical advice and evidence based research included, particularly in the upper limb rehabilitation and strength evaluation chapters. However, others are a little basic with insufficient detail and evidence given from research literature. This could be improved by lengthening this section, with more practically orientated information provided.

The final section on sport specific conditions gives a good account of injury type and incidence in a wide variety of sports, including data on some that often receive little attention in the research literature such as cheerleading. It does not, however, include other popular sports played by females around the world such as rugby, netball, and handball. The omission of a chapter on rugby is surprising, as the USA are former world champions in this sport!

Of course not every book will please every reader all the time, and this book is no exception. However, it does, and very successfully, attempt to cover a huge area in dealing with many aspects of care of both recreational and the professional athlete. Overall, this book makes practical and enjoyable reading and it should be on the shelf of all those managing athletes. Obviously it is impossible to include everything that each reader wants to see, but I want to commend the authors and contributors for their hard work in providing this wide reference base on the female athlete. Such a work is long overdue.

Analysis

Presentation 16/20
Comprehensiveness 15/20
Readability 17/20
Relevance 18/20
Evidence basis 8/20
Total 81/100

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Strength and power in sport, 2nd edn


Enhancing strength and power is now acknowledged as an integral part of the training process for many sports, as well as being beneficial for members of the general public. However, a number of myths and misconceptions about strength and power training still exist. By encapsulating our current knowledge in this area, Strength and power in sports may help to dispel some of these myths and lead to better practice in the field. The range of topics covered in this book is vast, spanning most of the issues that influence the development of strength and power. These issues are examined in detail within the five sections of the book, which are: definitions; the biological basis for strength and power; optimization of adaptation in strength and power training; special problems in strength and power training.
Readers who enjoyed the first edition of this book will be delighted to see that most of the original 30 contributors (all world experts in their field) accepted the invitation to revise and update their chapter(s) for this edition. Although such multiauthor books can sometimes lack congruency and be repetitive in places, the editor should be applauded for ensuring consistency and minimising repetition. Although the structure and content area of the current edition is very similar to the first edition, some excellent new chapters have also been included. These new chapters describe: proprioceptive training; aging and neuromuscular adaptations to strength training; biomechanics of strength and power training; the application of vibration loads for strength and power development. Such additions to this edition reflect the rapid growth of research interest and knowledge in these specialist areas. On the other hand, some chapters that I valued in the first edition—for example, anthropometric factors related to strength and power, as well as training for bodybuilding and power events—have been omitted. However, the lack of such sections is a minor quibble, as the material presented in the current edition is well written and probably covers the most important aspects of strength and power development.

This book would be a great reference for anyone interested in strength and power training and development. I would recommend its purchase for sport scientists (in particular exercise physiologists and biomechanists), sports medicine professionals, university students in the field, strength and conditioning coaches, clinical exercise specialists, and personal trainers. Hence, I believe that a copy of this book should be found in the library of any institution in which sports science or medicine is taught.

Overall, I found the book to be well presented with a logical structure (both within and between chapters). The numerous figures and tables highlighted pertinent research and complemented the material presented in the text. Consistent with the aims of the International Olympic Committee (IOC), this book was very comprehensive, covering (in detail) most issues that relate to strength and power development. However, chapters on the influence that anthropometry and nutrition have on strength and power would have been invaluable. Although some of the nutritional issues are discussed in Nutrition in sport (another book in the IOC Encyclopaedia of Sports Medicine series), it would be convenient to find such material in Strength and power in sports as well. Similarly, although one chapter describes training for Olympic weightlifting, I would have also appreciated the inclusion of comparable chapters on other sports as well. Strength and power in sports was a pleasurable and informative read, as it was generally written in a scientifically rigorous yet reader friendly manner. However, some readers may find sections within the small number of mathematically based chapters more difficult to follow. Regardless, readers should endeavour to work through such chapters, as they will be rewarded with a greater understanding of strength and power development. As the material covered in this book is based predominantly on peer reviewed journal articles (a good number of which were written by the chapter authors), such material generally reflects the current views in the field. However, some examples of anecdotal evidence and/or personal views also appear in certain chapters. The presentation of such non-refereed material may reflect the relative infancy of research in strength and power training and/or the accumulated wisdom and experience of the authors. Although not yet experimentally validated, such speculation may act as a catalyst for further research.

Exercise and sports cardiology


On numerous occasions athletes are charged with “having no heart” or alternatively “having a huge heart”. According to this text they all have one, but they do vary in size considerably.

This is not “Sports cardiology for dummies”! Pitched more at the cardiologist with an interest in sport, than the sports physician with an interest in cardiology, this text overflows with information. It assumes a basic knowledge of cardiology, for example arrhythmias, ECG interpretation, and the basics of echocardiography. If you are a little rusty, keep the basic text handy.

Many parts are highly technical and delve deeply into cardiac and exercise physiology. For the scientist this is fantastic, the sports medicine clinicians may wish to skip it.

However, the clinical sections are excellent. The relevant topics are dealt with clearly, thoroughly, and with more than adequate depth. It describes diagnostic criteria for relevant syndromes (Marfans, HCM) affecting the heart and includes up to date genetic research in these areas. All appropriate sports medicine and cardiology issues are explored, with excellent sections on children, screening, and the effects of exercise on medical conditions such as diabetes and lipid disorders. Interestingly, treatment of all areas mentioned is discussed only fleetingly.

The book can be complex but the statements are reasoned, and the authors clinical perspective is interesting and thought provoking. Despite this complexity in some parts, Exercise and sport cardiology will be an excellent reference text for those studying and practicing clinical sports medicine and is something that has been missing from the library until this point.
The Leeds Sports Imaging Course
6–7 September 2004, Leeds, UK
This two day course is aimed at both radiologists and clinicians who are involved in sports imaging. The course will comprise an imaging and clinical overview of all relevant joint, bone and soft tissue sporting injuries. The faculty will comprise internationally recognised skeletal imaging and clinical experts from the UK, Europe and North America who will deliver state of the art lectures and lead sessional discussions. Each session will cover the spectrum of injury for a specific anatomical area beginning with clinical lectures that will allow the subsequent imaging lectures to be placed in context. All aspects of imaging will be discussed but will concentrate on the use of ultrasound, conventional MR imaging and MR arthrography for the diagnosis, staging and prognosis of sporting injuries. Therapeutic image guided intervention using fluoroscopy, CT and ultrasound will also be demonstrated.

The 6th STMS World Congress on Medicine and Science in Tennis in conjunction with the LTA 2004 Sports Science, Sports Medicine and Performance Coaching Conference
Keynote speakers include Professor Per Rentström (SWE), Professor Peter Jokl (USA), Professor Savio Woo (USA), Dr Carol Otis (USA), Dr Mark Safran (USA), Dr Ben Kibler (USA), Prof Bruce Elliott (AUS), and Professor Ron Maughan (UK).
Further details: Dr Michael Turner, The Lawn Tennis Association, The Queen’s Club, London W14 9EG, UK; email: michael.turner@LTA.org.uk

9th European College of Sports Science Conference
3–6 July 2004, Clermont-Ferrand, France
More than 1500 participants from 70 countries are due to attend.
Further details: website: www.ecss2004.com

The 23rd Congress of Sports Medicine of the AZ Sint-Jan AV
15–16 October 2004, Brugge (Belgium)
Further details: Tel: +32 (050) 452900; fax: +32 (050) 452231

2nd International Ankle Symposium
15–16 October 2004, Newark, DE, USA
The meeting will examine ankle instability and other related ankle pathologies from a multidisciplinary perspective. Attendees will include clinicians and scholars from the disciplines of orthopedics, podiatry, physical therapy, athletic training, biomechanics, and sports medicine. This conference aims to build on the success of the inaugural symposium held in Ulm, Germany in December 2000. Emphasis will be on oral and poster presentations of original research along with selected plenary presentations.

The deadline for abstract submissions is July 1 2004.
Further details: Jay Hertel, PhD, ATC, FACS, Conference Co-Chair, Penn State University, email: jnh3@psu.edu, or Thomas Kaminski, PhD, ATC, FACS, Conference Co-Chair and Host, University of Delaware, email: kaminski@udel.edu. Website: http://www.udel.edu/ias/

1st World Congress on Sports Injury Prevention
23–25 June 2005, Oslo, Norway
This congress will provide the world’s leading sports medicine experts with an opportunity to present their work to an international audience made up of physicians, therapists, scientists, and coaches. The congress will present scientific information on sports injury epidemiology, risk factors, injury mechanisms and injury prevention methods with a multidisciplinary perspective. Panel discussions will conclude symposia in key areas providing recommendations to address the prevention issue in relation to particular injuries and sports.
Further details: Oslo Sports Trauma Research Centre and Department of Sports Medicine, University of Sport and Physical Education, Sognsveien 220, 0806 Oslo, Norway. Email: 2005congress@nih.no; website: www.ostrc.no

4th European Sports Medicine Congress
13–15 October 2005, Lemesos, Cyprus
Further details: Email: pyrgos.com@cytanet.com.cy
Clinical governance is unworkable

E N Grosch

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