Clinical examination of the knee involves eliciting certain signs that may indicate the presence of knee pathology. One such is quadriceps wasting. This occurs most commonly as the result of disuse or from a painful or unstable lesion of the knee.

Comparing the circumference of the thighs at a set level above the patella is the standard method of testing for atrophy. This, however, assumes that the thighs are normally of equal circumference. It has been noted by the senior author (GCB) that, in children, the non-kicking leg seemed often to be larger than the other. We aimed to test this observation in a prospective study of a group of professional soccer players.

Patients and methods
A population of 38 players took part in the study, all from professional clubs in Edinburgh. None had a recent injury. All the participants had both thigh circumferences measured at a point 15 cm above the proximal pole of the patella. In each case the subject was standing and the quadriceps relaxed. The trial was blinded in that the investigator making the measurements did not know which foot was predominant. To minimise error, all measurements were carried out by one investigator. The foot preference of each player was recorded on a sliding scale and later converted into a percentage. All expressed a preference for one foot over the other.

Results
Complete data were available for 38 players. Of those with a preference for their right foot, 95% (n = 20) had a larger left thigh (range 1.5–2 cm). The difference was less striking in the group with left foot preference, with 62.5% (n = 8) having a larger right thigh (range 1.5–2 cm).

These differences were analysed using the Wilcoxon signed rank test (Minitab Release 12.21: www.minitab.com). The test showed that the differences were significant (p = 0.001) with a 95% confidence interval for the median difference in thigh circumference (non-dominant) of 0.5 to 1.0 cm.

Discussion
We conclude that there is strong statistical evidence that the thigh circumference of the non-dominant leg is significantly greater than that of the dominant leg by between 0.5 and 1 cm. This supports the hypothesis that professional soccer players have larger quadriceps in their non-kicking legs. This should be taken into account when examining the legs of sportsmen and women.

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There is much scope for further investigation into this trend, particularly as to whether it occurs in other sports, and at what level of participation this effect becomes apparent.

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References

BOOK REVIEWS

Exercise physiology: people and ideas


It is not often that one finds a systematic review of science history that reads like an exciting non-fiction novel, but Exercise physiology is just that. In fewer than 500 pages, a surprisingly in-depth story of the growth in the understanding of exercise physiology science is told. The authors trace the exciting journey of discovery—a journey that at times was painfully slow when centuries passed by in which no contributions to the field were made, and at other times when discovery and new ideas emerged with breath taking speed.

The splendid introductory chapter, Ancient and early influences, traces the development of the thought, ideas, and study of exercise physiology from Hippocrates to Austin Flint.

The physiological concepts of Galen, the first sports medicine physician (he was physician to the gladiators at Pergamum), are described in depth—concepts that governed medical practice for nearly 1500 years. Among others whose ideas are described are Vesalius, Avenia, Descartes, Willis, and Boyle. Early thoughts on the training of athletes and of exercise physiology were confirmed or disproved and discarded. The chapter author skillfully fluxes out concepts and elucidates controversies.

As edifying the reading of the introduction is, the reader will find the chapters organised around major body systems physiology just as enlightening. Editor Charles Tipton, who also contributed the chapter on the autonomic nervous system, brought together 19 other distinguished scientists as chapter authors, several of whom have received the Olympic Prize in Sports Sciences and several others the ACSM Honor Award. The chapters trace the development of the science of exercise in the neuromuscular, cardiovascular, respiratory, autonomic, oxygen transport, aerobic metabolic, anaerobic metabolic, endocrine, temperature regulation, renal, and gastrointestinal systems. Among the scientists whose work is discussed in these later chapters are Henneman, Burke, A V Hill, Fick, Starling, Guyton, Asmussen, Astrand, Cannon, Zuntz, Selye, Ingle, Costill, and Lambert.

Each chapter includes a frank discussion of controversy and ideas with a skilful distillation of various conclusions. A bonus is the nearly encyclopaedic list of references, 1876 in all, a treasure of literature review.

The latest in the People and ideas series of the American Physiological Society, Exercise physiology is a superbly organised and splendidly written history of exercise physiology. The text will be a useful addition to the library of those sports medicine professionals interested in the history of the science of exercise.

McMinn’s colour atlas of human anatomy


Back in the late 70s, when Gray’s and Grant’s anatomy atlases ruled supreme for my
vintage going through medical school, this text would have been a hit on the medical bookshop shelves: over 350 pages of layered real photo images of cadavers beautifully numbered, indexed, and with useful undergraduate level clinical text at the end of each chapter.

For students of medicine and other undergraduate areas, this is a whole atlas of human anatomy, not just limited to the musculoskeletal system. So for those looking purely for a musculoskeletal anatomy text, this would not be the most appropriate; a lot of pages—for example, those covering abdominal viscera—might never be perused.

Bony anatomy is, however, well covered, including muscle attachments, although illustrated drawings without descriptive text has its drawbacks; in many cases, one has to look at more than one page to follow a whole muscle group from origin to insertion. In areas of very complex anatomy especially, such as the axilla/brachial plexus region, more text would have helped the reader to understand the anatomical relations of structures to each other. But the CD ROM comes into its own here: seven regions in detail where one can scroll through the images from superficial to deep layers (including the detailed courses of arteries, veins, and nerves), rotate the images to view at all angles, enlarge them, add and remove muscle layers off the models, and rotate limbs around to follow dermatomal distributions on surface anatomy. It certainly would have made learning clinical anatomy for exam purposes a whole lot easier 20 years ago and will now become a very useful teaching aid in my office for patients and visiting students alike.

Who is the book pitched at? In the preface, the authors say that it is aimed at students of human anatomy including medicine, dentistry, physiology, and occupational therapy students, but postgraduate students in orthopaedic surgery and sports medicine would find aspects of this very useful.

The clinical notes at the end of each chapter tend to be pitched very much at an undergraduate level clinical text at the end of each chapter. But the CD ROM comes into its own here: seven regions in detail where one can scroll through the images from superficial to deep layers (including the detailed courses of arteries, veins, and nerves), rotate the images to view at all angles, enlarge them, add and remove muscle layers off the models, and rotate limbs around to follow dermatomal distributions on surface anatomy. It certainly would have made learning clinical anatomy for exam purposes a whole lot easier 20 years ago and will now become a very useful teaching aid in my office for patients and visiting students alike.

Do not buy this book if you are seeking the scientific basis of the rehabilitation of sports injuries. As such it is relatively dry and will not have wide appeal for those seeking guidance in their practice of rehabilitation of the injured athlete. It does, however, provide a good review of the scientific basis of tissue healing and addresses the sound underpinning principles of rehabilitation and commonly used modalities.

As with any multiauthor edited text, the quality of individual chapters is variable. I was particularly surprised, and indeed disappointed, that the chapter addressing tissue healing and repair of bone and cartilage barely mentioned stress fractures and instead concentrated on the healing and management of traumatic and long bone fractures, which is perhaps of greater interest to orthopaedic trainees than practicing sports medicine physiotherapists.

Physical therapies in sport and exercise
Edited by G S Kolt, L Snyder-Mackler. Published by Churchill Livingstone, 2003, £60.00, hard-cover, pp 623. ISBN 0443071543

Physical therapies in sports and exercise, as the name suggests, is sports medicine from a physical therapy perspective. As with all of these types of book, it tries to cover everything. It draws on clinicians and researchers from around the globe, and succeeds well in giving a general guide. It is a mix of strong and concise anatomical review, general concepts within sports and exercise, regional injury management, other active groups, and a section on medical issues.

The editors make the point early on that there is a dearth of evidence for the techniques and approaches we use in physical therapies within sport. The stated aim is to “provide a logical approach to the management of sport and exercise injuries that considers the available evidence for the efficacy of a variety of management approaches.” This book tries to use supporting evidence to develop the ideas presented, but despite this, often draws on the anecdotal clinical experience of the authors. How else would they get the notion that short runners tend to overstride (p 250)? If the book had stuck to the stated aim of evidence based statements, we would only have a book half the size and a lot more short athletes with facet joint problems.

This approach is demonstrated beautifully in the chapter on patellofemoral pain syndrome (PFPS). Sections outlining the theory, evidence, and practice of this condition present the anecdotal evidence, the clinical findings, and acknowledge where further research needs to be done. It highlights that the evidence based techniques we now use for PFPS are the same techniques we used in our clinics 5–10 years ago which were then not evidence based! Without wishing to delve too much into the debate of “evidence based medicine”, I found that this chapter, in general, rides the line well between providing the evidence for the management and acknowledging that other areas used within the overall program need to be further investigated.

There was quite a discrepancy in the layout and structure of the other chapters. It was difficult to know the focus. The clinician looking for prescriptive rehabilitation techniques and programmes would do well to look in the elbow chapter, but if looking for similar protocols for hamstring injuries, the clinician would be disappointed.

Similarly, the amount of space allocated to a region was inconsistent, and this was probably due to how much evidence was available or the interest/knowledge of the authors. Whereas there were 20 pages devoted to patellofemoral joint pain, there was a page and a half on groin pain in its entirety, including just a few paragraphs on osteitis pubis. The multifactorial nature of hamstring pain and the management of this condition were given cursory consideration, despite the fact that these conditions often present the biggest challenge to the practitioner.

The last chapter makes an interesting read and attempts valiantly to roll years of academic and clinical sports physician training into a few short pages. Within sports medicine, it is all too easy to get caught up in addressing the musculoskeletal issues, and forget the impact of common (and not so common) medical issues on the elite athlete. As primary contact practitioners, we have to ensure we have a strong multidisciplinary team around us. I would have liked to see a bit more attention paid to the multidisciplinary team and the physical therapists role within it.

There is some really useful information and up to date evidence based thinking within this text. For the primary clinician on the field of play, however, to rely on the knowledge in this book as the sum total of his/her arsenal would be to be left wanting. On balance, I can recommend Physical therapies in sport and exercise as an invaluable adjunct to the sports clinician’s library.
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