

Editors | Paul Comfort and Earle Abrahamson

Sports Rehabilitation and Injury Prevention

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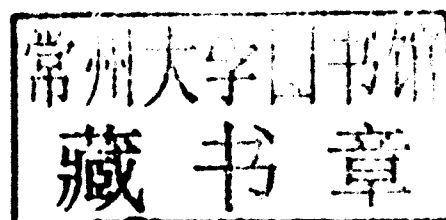
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Sports Rehabilitation and Injury Prevention

Preface

The concept for this book is based on the expanding field of sports rehabilitation and injury prevention. Evidence of this expansion includes an increasing amount of research and publications related to sports rehabilitation and allied fields of practice such as sports therapy, athletic training and sports physiotherapy.

Despite the number and volume of publications in sports rehabilitation, there appears to be limited resources that accurately and effectively account for evidence-based practices. Whilst some resources expand evidence-based practice knowledge, there is a need to develop a complete resource that fully explains and articulates these important principles. This current text has used an evidence-based practice approach to fully acknowledge the many diverse areas, applications and management strategies that are often unique to sports rehabilitation, but distinctly different from similar fields of practice and study.

Few sports rehabilitation programmes currently provide students with the breadth of information and practical application required for professional practice. This text has attempted to bridge the knowledge and practice gap, by considering the functional development of the sports rehabilitator's knowledge and practice requirements for professional competency. The text provides an up-to-date look at different evidence-based practice protocols and initial assessment strategies for the screening of injury and pathological conditions.

The first few chapters introduce the scope of practice for sports rehabilitation, and then describe, explain and evaluate the initial assessment and screening procedures necessary for decision making and clinical practice. These chapters further provide analysis on musculoskeletal function and dysfunction in relation to systemic organisation. The next

set of chapters combine a useful integration of applied areas and practices of study relevant to sports rehabilitation practice. These include, amongst others, nutritional analysis, psychological considerations in injury management and prevention, clinical reasoning development, and strength and conditioning principles. The book concludes with a range of chapters devoted to different injury conditions and body regions. These chapters detail the more common injuries and pathologies and argue for best management strategies based on research and applied evidence.

Each chapter also contains several practical application boxes that provide additional information summarising unique chapter-specific information. The majority of chapters contain applied examples and case studies to illustrate the processes and decisions necessary for clinical action and management. Each case study has been carefully developed to facilitate group discussion in the classroom, or for the clinician to consider as part of continued professional development.

In addition to serving as an upper level undergraduate or graduate textbook for students or clinicians in practice, the book is an excellent resource guide, filled with useful information and evidence-based practice considerations and applications. You will want to have this textbook on your desk or bookshelf. The features of consistent organisation, case studies, discussion questions, up-to-date references, research evidence and practical application boxes are designed to provide information required for effective study as well as directing clinical practice.

The design of this text can be compared to building a house, in that each component of both the text and house building can be modelled on individual building blocks. In the case of the house building

these units are represented by the bricks, whereas in the text, the individual chapters are synonymous with these units. Before one commences the building process, there is a carefully constructed visual or diagrammatic plan to navigate the process; so too does this planning apply to the design and shaping of this text. In the building process, consideration is given to the foundation, in terms of its shape, depth, form, and length. This text has a number of foundation chapters that secure the content for future development of the other chapters. The main foundation knowledge is the understanding of anatomical application, and using this knowledge to guide assessment. This anatomical foundation knowledge informs the decisions necessary for clinical action in terms of injury management. Whilst bricks are important in terms of informing the structure of a building, it is the cement that ensures that each brick is secured and articulates with other bricks and structures. In this text, the cement is represented by underpinning themes, such as clinical reasoning skills and abilities, that traverse the chapters and ensures that each chapter although perceptively different, is able to articulate with other chapters and develop this consortium of knowledge.

After completion, houses take on a new shape and design, one which may have transformed the original landscape; however there is always room for

change, improvement or refinement. This text, in its final form, has orchestrated the journey of clinical practice from consideration of the scope of practice, through to the essential skills necessary for decision making, and concluding with a consideration of how to manage a range of injuries and pathologies. The text is coated with an evidence-based approach to using and applying knowledge. The true advantage of developing the text within an evidence-based context is that it allows the reader to consider the existing knowledge and evidence; challenge the research; and move towards asking different types of questions to consider new ways of dealing with client management issues. As new research becomes available, clinical practice will be questioned. The contents of this text will evolve and change to accommodate and explore new ideas and advances in clinical research. This book provides the architecture necessary to consider the real issues current to clinical practices. It is important to use it as a map for navigating the concepts, principles, challenges and decisions of clinical practice.

We hope that this book is a valuable resource both for teaching and as a reference for sports rehabilitators and clinicians.

Paul Comfort
Earle Abrahamson

Acknowledgements

Thank you to all of the authors involved with the development of this text, including those who provided advice and feedback on each of the many drafts. Without the expertise, dedication and effort of each of these individuals, this text would not have been possible.

Thank you to my family, especially my children, for putting up with my 'absences' and long hours staring at the laptop, during the development of this book. Your support and understanding has been more than I should have asked for.

Paul Comfort

A special thanks to the many contributors who worked so diligently, often under difficult and pressurised circumstances, to write this text and to those who provided expert reviews. Also to my many

students who taught me so much about how to articulate concepts, theories and applications in a learner friendly manner, which helped shape the landscape of this book.

To my wonderful wife, Emma, and my adorable son, Benjamin, thanks for putting up with me and providing much love, support and understanding.

To my father, Charles, and my brother, Michael, thanks for always believing in me and encouraging me to succeed and achieve in life.

Last but not least, I would like to dedicate my contribution to this book, to the memory of my late mother, Josephine, whose support, inspiration, kindness and generosity, will forever be cherished and respected. Thank you for believing in me and supporting my academic and professional development.

Earle Abrahamson

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est in student learning and thinking. Earle spent the majority of his life in South Africa, studying and working, and moved to the UK in 2002. He is a South African-registered therapist and psychologist and has membership and professional registration with a number of UK authorities. Earle has worked extensively as a sports rehabilitator with national and international teams, including the world strongest man event. Earle sits on the executive committee of the British Association of Sports Rehabilitators and Trainers (BASRaT), as their student liaison officer. In this role he deals with and promotes the BASRaT student experience. Earle is the Middlesex University representative for the higher education academy's hospitality, leisure, sport and tourism sector. He is currently working on a professional doctorate investigating different learning approaches in the development of clinical reasoning skills on undergraduate sports rehabilitation programmes.

Earle is married to Emma and has a son, Benjamin. In his spare time he enjoys sport and is an active cricketer and tennis player. He further enjoys reading and music.

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How to use this book

The text has been designed to allow the reader to consider and understand important themes, principles and applications that inform clinical practice. Each chapter begins with an introductory paragraph (see below) that identifies and outlines the aims and outcomes for that chapter.

uses a schema diagram to illustrate how the sports rehabilitator works with other sport medicine practitioners to manage injury. When reading this initial chapter, consider how your scope of practice and professional identity is formed. Use the chapter to help you reinforce your code of practice and reflect

The chapter aims and objectives will be emphasised at the beginning. Use these to confirm your understanding of the chapter content.

This chapter provides an overview, analysis, and application of clinical reasoning and problem solving skills in the development of professional competencies within the health care profession generally and more specifically sports rehabilitation. The chapter is important as it will help you develop your thinking skills as you progress your reading throughout the book. By the end of this chapter the reader will be able to locate and explain the role and efficacy of clinical reasoning skills within a professional practice domain. This will inform an appreciation for the complex nature of knowledge construction in relation to clinical explanation and judgement. By considering clinical reasoning as a functional skill set, the reader will further be in a position to explain different models of reasoning and ask structured questions in an attempt to better formulate and construct answers to clinical questions, issues, and decisions. The chapter will further encourage the reader to use problem solving and clinical reasoning skills to justify substantially, through research evidence, professional practice actions and outcomes.

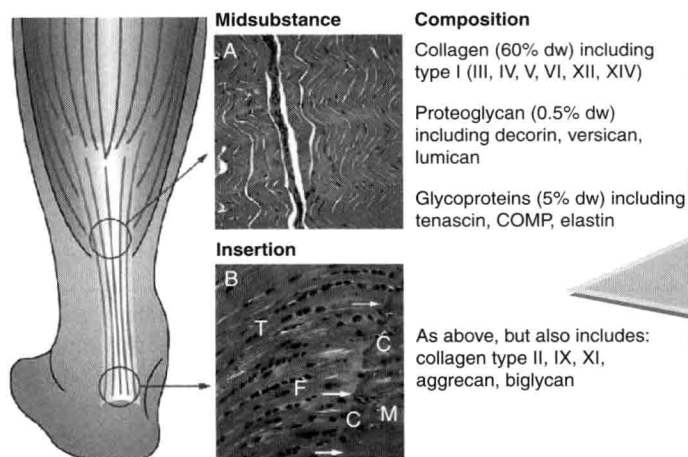
The first chapter provides an overview of the scope of practice for the sports rehabilitator and/or allied health care professional. Within this chapter careful consideration has been given to the position of the sports rehabilitator within a sport and exercise medicine team. The chapter further deals with issues around medical, ethical and legal concerns, and

on the medical ethical and legal requirements for your profession.

The following chapters deal with issues around injury screening and performance assessment. These chapters introduce and debate issues concerning assessment and screening, and present research evidence to validate claims. It is useful when reading

these chapters to consider how screening and assessment work to accommodate a range of athletes from different sports. Clinicians who simply follow a set programme or protocol for assessment may find it difficult to defend clinical actions and decisions should the athlete not improve following the intervention delivered. It is important to be able to relate the content of the chapter and decide on how best to screen or assess an athlete based on evidence from research studies.

Chapters 4–8 introduce and evaluate the pathophysiology of musculoskeletal components. These chapters are crucial when considering injury management as well as prevention strategies. Each of these chapters makes use of diagrammatic representations of the key musculoskeletal components (see below) and highlights the healing and repair stages of musculoskeletal injuries.



The pathophysiological chapters make use of diagrams and illustrations to highlight key anatomical landmarks and pathological concerns that could impact healing and prolong recovery.

Reference to later chapters and consideration of specific treatment strategies supported by research is evident. When reading these pathophysiological chapters it is useful to consider the primary anatomy of the structure and its normal functional state. Consider how this functional state changes or compensates movement as a result of trauma or pathology. Use this knowledge as a precursor to injury management and a way to shape clinical decisions and actions.

The next seven chapters encompass important themes necessary for effective clinical decisions and management options. Use these chapters to help ap-

preciate the sport sciences and how an understanding of principles of strength and conditioning, psychology, nutrition, performance assessment and clinical reasoning could be used to highlight areas of concern and move the practitioner to a more complete evaluation and treatment of the athlete. The design of these chapters, have been carefully considered to ensure that you, as reader and clinician, can use important conceptual applications in the management of the client. The themes explored within these chapters are not unique to the chapter per se, but rather form an important thread throughout the text. Exploring the themes within these chapters will hopefully allow the reader to conceptualise sports rehabilitation and injury prevention as a functional ongoing and working operation that requires thought and research evidence to fully appreciate the merit of treatment and rehabilitation.

The final section of the text is dedicated to joint-specific injuries and pathologies. These chapters introduce the injuries and specific assessment techniques by considering evidence-based practice protocols. These chapters tie together the important consideration for injury prevention and management. The chapters culminate in applied case studies (see below) that are used to illustrate the thought process and clinical decision mapping necessary for effective injury management. It is important to consider how decisions are reached and what processes need to be examined as opposed to simply reaching a decision.

Case Study 20.2

A 24 year old male sprinter with left sided groin discomfort since a plyometric session three months before this initial consultation had resulted in discomfort after every training session.

- Lower abdominal and medial anterior groin pain following activity that is becoming progressively longer to improve with rest.
- Becomes very low grade and almost unnoticeable with rest.
- There is irritable pain when coughing and sneezing.
- Feels 'sore' in the groin when sitting upright for a while.
- Pain in the deep inner groin when squeezing the legs together, particularly in bed.

Pain was described as exercise related and variable between 1 and 7 on the IO point scale.

There were minimal impingement signs with hip flexion-adduction.

On inverting the scrotum and placing the little finger in both superficial inguinal rings, the left side appeared more tender and dilated than the right, with a cough impulse.

The left adductor was relatively weaker than the right and painful in resisted adduction lying with straight legs, but not with legs bent in flexion.

There was no discomfort on stretch.

Stork views of the pelvis, standing on one leg and then the other excluded pelvic instability, pubic symphysis and hip pathology.

Each injury-specific chapter makes use of an applied case study to frame the clinical issues and consider appropriate and evidence-based treatment and rehabilitation programmes. Use these studies to check your own understanding and decide on whether you agree with the clinical management and/or decisions discussed within the study.

The patient was referred to a surgeon for opinion.

During surgery the following groin disruption was identified in the operative report:

- torn external oblique aponeurosis
- the conjoined tendon was torn from pubic tubercle
- dehiscence between conjoined tendon and inguinal ligament

Each element of this groin disruption was repaired surgically.

Treatment and rehabilitation

Normal protocol for the first day post operation included stand and walking with gentle stretching and stability exercises.

Five days post operative ultrasound ascertained core stability to be poor and Transversus Abdominis activation (Cowan 2004) was achieved with practice, using patient visualisation of the ultrasound real-time image for re-education.

Adductor exercises (Figures 20.4–5) were encouraged one week post op, several times per day.

Closed chain exercises for stability (e.g., Figures 20.6–9) combined with slow controlled squats progressing to single leg squats, were developed two weeks post op with hydrotherapy for flexibility and stability.

Swimming, cycling and cross-trainer elliptical exercise developed in the third week.

After four weeks he started straight line running build ups alternate days.

Conclusion

This athlete returned to relatively full training after two months and competed internationally six months after the surgery.

Discussion

- At what time should an athlete with groin discomfort be referred to a surgeon to consider operative intervention.
- Should a longer period of conservative treatment and rehabilitation take place before referral for surgery.
- Should the patient have been referred for other investigations, e.g. ultrasound scan or MRI.
- What other areas of the body may contribute towards this athletes injury.

In summary, the contents of this book, are designed to evoke clinical decisions based on research evidence. The chapters are sequenced to allow the reader to develop an appreciation for understanding and analysing clinical practice and actions. Individu-

ally the chapters provide a framework for conceptualising different scientific applications and practices, but collectively they form a compendium of clinical knowledge, cemented by clinical practice and framed within an evidence-based context.

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