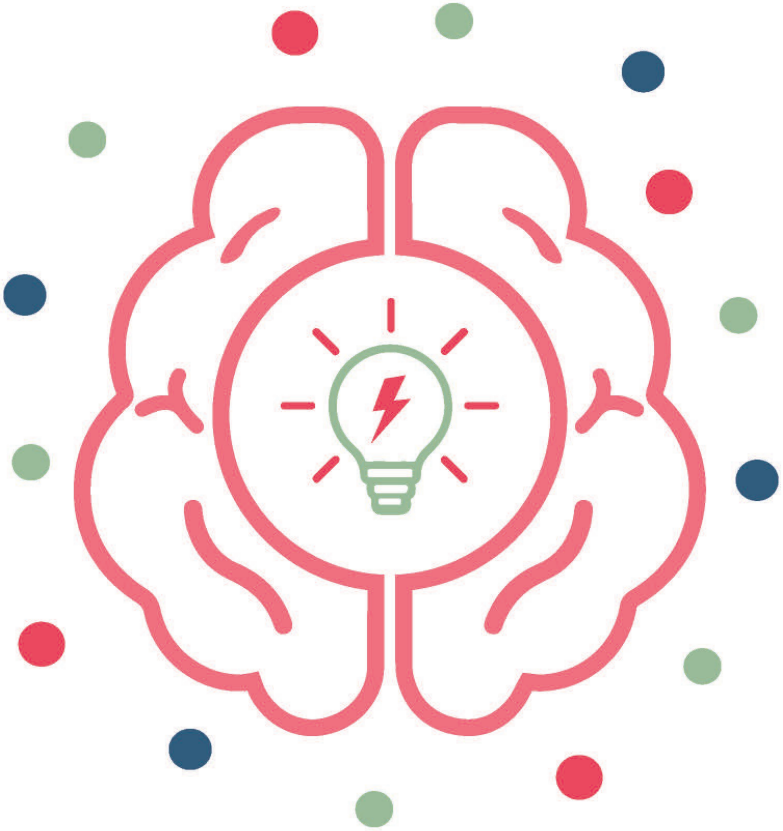
Concussion Competencies From A British Perspective

A Framework for Concussion Management



Concussion Competencies from a British Perspective:

A Framework for Concussion Management

By

Arthur Maerlender,
Jennifer Parent-Nichols
and Sandra Stalker

Cambridge Scholars Publishing

Concussion Competencies from a British Perspective:
A Framework for Concussion Management

By Arthur Maerlender, Jennifer Parent-Nichols and Sandra Stalker

This book first published 2020

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-5275-5040-0
ISBN (13): 978-1-5275-5040-7

Design & layout: Syron Design Academic Publishing

Table of Contents

Section 2: Behavioural Aspects of Concussion

Section 3: Programmatic Considerations

List of Figures

List of Tables

Preface to the British Edition

The original edition of Concussion Competencies was conceived out of the principal author's work with US schools and health professionals. Far more student athletes were being diagnosed and managed within school settings than by medical clinics or primary care doctors. Approximately half of US high schools have athletic trainers or "physios" to manage athletic injuries. It seemed that even if primary care doctors were involved, it was up to the schools to monitor and track progress. Pragmatically, schools are where children spend the most time; and it is structured time allowing for better observation of cause and effect. With the return to learn concerns becoming prominent, it seemed clear that schools had a stake in keeping students on track without under- or over-stimulating them, which is what an active rehabilitation approach recommends.

The UK sport and healthcare contexts are different than in the US as both health care and educational systems are organised differently. But interest in this approach from colleagues in Britain made an adaptation a desirable endeavour. Meeting with school personnel, educational administrators, sports club administrators (primarily rugby), medical professionals and professional sport physios reinforced our commitment to this adaptation. While the basics of concussion physiology, diagnosis and management are universal in nature, the programmatic approach to management must meet different structural and cultural requirements.

To that end, we are indebted to our British colleague and co-author Sandra Stalker who guided us through much of the educational system from her knowledge and experience as a Headteacher and former Director of General Qualifications and Life Skills at the Qualifications and Curriculum Development Agency.

While we were working on this adaptation, we were gratified to see the report, "Time for Change" (September 2018) from the All-Party Parliamentary Group on Acquired Brain Injury." The parallels with "Concussion Competencies" are striking and we thank Dr. Michael Grey for alerting us to this important document. Within that report's context, this volume can hopefully further the goals outlined for sports-related concussions and paediatric brain injury in general.

Given such gracious and helpful information, we understand if this volume has a distinct American flavour. But the principles, issues, and the needs of students are the same on both sides of the Atlantic. As with the US edition, this volume is not intended to be an answer, but an attempt to move discussions forward about the types of information needed to provide efficient and effective concussion care; and critically, for whom are the various pieces most important? It is our observation that the British healthcare system has features that make this approach to concussion management somewhat easier. A comparative study would be wonderful. The Competencies framework is intended to provide a basis for such a study as well. It is with those intentions that we are happy to provide the British edition of Concussion Competencies. We hope the readers agree.

Acknowledgements

The authors are grateful to the following people for their help and support for making the idea of a British edition become a reality. Of course, out partners tolerated the time and effort this endeavour took. It could not have been done without their whole-hearted support. And a "shout-out" to Jonathan Lichtenstein for his work on the US Edition that informed the writing of this version.

Gaining access to those with knowledge to share was critical. Notably, Ali James of Wasps Rugby, Dr. Michael Grey at East Anglia University, and Dr. Toni Belli of Queen Elizabeth Hospital Birmingham provided critical insights into the NHS and medical system to inform this volume. The challenge for concussion management, and our intent to support those responsible for it still required insight into the intersections of these systems and the important and prominent role played by club and community sport in the UK. We gained valuable insights about these intersections and differences from Pat Clayfield, Headmistress of St. Edwards School, Cheltenham, Dan Price (teacher i/c rugby) and Andy Sellars (teacher i/c hockey) at Lawrence Sheriff School, Rugby, Robin Caley (President, Woodrush Rugby Club), and Nick Eastwood (CEO Wasps). If there is a bias towards rugby it is entirely due to the senior author's experience as a player and coach. Spending time with the Wasps was a personal highlight.

BACKGROUND

I. INTRODUCTION

It is appropriate that medical training for Traumatic Brain Injury (TBI) or concussion, as it is more commonly known, focuses on the acute, emergent status of recently injured patients. However, once a neurological emergency has been ruled out, the vast amount of time and effort dedicated to patient care is given to behavioural interventions, i.e., managing and monitoring the patient. In short, concussion management is behavioural management. As a form of secondary prevention, the aim of concussion management is prevention of a second injury; a prolonged recovery; and all other domains of risk associated with the aftermath of a concussion — social, psychological, medical, and behavioural.

There is a statutory duty for schools in England to support students with medical conditions. The Children and Families Act of 2014 does not specifically mention the management of concussion, nor does it need to. What the Act does make very clear is that from September 2014, there has been a duty on schools, health bodies, and other key players to make arrangements to support students with medical conditions, so that the student can play a full part in school life, remain healthy and achieve their academic potential. The Act also specifies that monitoring and interventions occur in emergency circumstances and that schools must be agile enough to respond to a change in students' needs over time, in ways that cannot be predicted. The key document is the Special Educational Needs and Disability (SEND) Code of Practice. Similar legislation exists in Northern Ireland, Scotland and Wales.

In respect of concussion, there are two points at which an intervention by school staff might be required. First, they may have to attend to a student who has suffered an actual or suspected concussion in school or while participating in a school activity. This injury could be the result of a sports incident, a playground fall, or a classroom accident. Second, a school may have to support a student who returns to school following a concussion, which may have been sustained either during a school or out-of-school activity. This support would need to take into account the student's needs in both returning to learn and returning to play. Any member of staff could have a role in either scenario.

Statutory guidance states that governing bodies should ensure that any member of school staff providing support to a student with medical needs has received suitable training and that this training is sufficient to ensure competence and

confidence in the ability to support injured students effectively. In this respect, staff training is critical. This book supports training efforts by addressing details of the identification and management of concussion to ensure school staff are well-prepared to function successfully in these circumstances, whatever their specific role. It does so by presenting and explaining ten "Concussion Competencies" that will help teachers and other professionals support students who suffer a concussion.

These competencies are informed by the first author's work on the Institute of Medicine's Committee on Sports-Related Concussion in Youth (US). A published text from this committee's work served as an extensive review of peer-reviewed research on concussions through 2013 (Institute of Medicine & National Research Council, 2014). The aim in specifying them is to provide a basis of knowledge for education and practice that can serve as a framework for analysis and action. The Competencies should be inspected, interrogated, and analysed as knowledge of concussion grows and changes. These are a starting point, not the final word.

Knowledge transfer refers to the methods of education. However, what knowledge should be transferred (taught) is largely undefined in practice although there is some research on the effects of learning programmes in concussion education (Mrazik et al. 2015; C. F. Provvidenza and Johnston 2009; C. Provvidenza et al. 2013).

Competencies are a combination of attributes such as knowledge, skills and attitudes that enable an individual to perform a set of tasks to an appropriate standard. Competencies offer a shared language for defining what is required of a profession.

Core competencies have been used to redefine curricula across the major health professions in recent decades. Competency-based education is felt to improve individual performance, enhance communication and coordination across courses and programmes, and provide an impetus for staff development, curricular reform, and leadership in educational innovation. In addition, explicitly specified, action oriented behavioural competencies can significantly enhance learning and assessment outcomes. They also can serve as the basis for certification processes (Calhoun, Ramiah, Weist, & Shortell, 2008).

In medical education, and in the promotion of healthy life-styles, competency-based education is a means of improving learner and patient outcomes (Carraccio et al., 2016, p. 648). It also informs advocacy for health

promotion, building capacity in the workforce, developing and revising education courses, and providing a framework for credentialing (Moynihan et al, 2015). Thus, the work of defining and refining core knowledge competencies is important to the development of any field of practice and study.

This competency-based behavioural curriculum is the outgrowth of many years of experience managing concussions across a variety of settings, including schools, hospitals, and outpatient clinics. Legislation places a lot of responsibility on school personnel. Schools would therefore benefit from an education programme that would improve awareness and understanding of all staff who play a part in supporting a student who has suffered a concussion. However, limited curricula exist that address details of the processes required to ensure staff are sufficiently prepared to function effectively in this context. The 10 Competences that form the basis of this book are the beginnings of such a curriculum.

The Competencies presented are arranged in three broad categories:

I. Biological aspects of Concussion

1. Basic Neuroanatomy
2. Biomechanics of Injury
3. Concussion Basics

II. Behavioural Factors

4. Risk Factors
5. Prevention and Concussions
6. Evaluation & Assessment Practices
7. Best Practices for Testing
8. Post-Acute & Chronic Treatment Approaches

III. Programmatic Considerations

9. Individual Recovery & Role of the School
10. Concussion Management Programming

II. DEVELOPMENT OF THE COMPETENCIES

The development of competencies grew out of several projects designed to effectively prepare individuals involved with identifying and managing young people with concussion. The authors conducted a study on the use of these ten knowledge competencies as they relate to the behavioural management of concussion in schools. Training sessions with school personnel were conducted using these competencies as learning objectives. The use of the competencies served to streamline the education of the key stakeholders, to establish clear roles and responsibilities for the different constituents, and to equip individuals working with students following a concussion with the relevant knowledge to optimise outcomes. The majority of participants, who were school-based health professionals working in the schools where the training occurred, judged the use of the competencies to be informative and useful to their practice. Survey results were analysed both immediately following the training and at a five–month follow-up. The greatest gains in knowledge were noted by those participants who said they had the least amount of knowledge pre-training. Participants also ranked the perceived value and relative importance of each of the ten competencies.

At the same time as the writing of this book, the American Academy of Paediatrics (AAP) formed a consensus panel to help identify areas that needed to be addressed in paediatric concussion, particularly with regard to institutional initiatives (Gioia et al 2016). The results of the process identified important elements of concussion programmes and calls for enhanced professional development and training. The important topics identified were: the neurophysiology of mild Traumatic Brain Injury (mTBI), the effects of mTBI in school, recovery from mTBI, programme or institutional policy considerations, forming interdisciplinary teams and the different "constituency" roles, injury identification, assessment and progress monitoring protocols, the evaluation of mTBI symptom status, academic, physical, and emotional interventions, "accommodations," and coordination of medical-to-school communication. Although the AAP report was produced and published independently of this volume, it speaks directly to the rationale for setting these Competencies as they fit nicely into the framework presented here.

There are many stakeholders involved in school-based concussion management – governors, trustees, headteachers, teachers, coaches, teaching assistants, health-care professionals and others, we believe that while all personnel responsible for students need some information and understanding of best practices in returning such students to the classroom and their prior level of performance and/or to sports activities, they do not all require the

same level of knowledge The development of competencies for specific personnel streamline processes while ensuring appropriate education. A broad corpus of knowledge for different interests that is not medically focused is needed. The list of Competencies appears in Appendix 1.

III. WHY FOCUS ON SCHOOLS?

The competencies were seen as a way to establish categories of knowledge that accurately pinpoint the skills and performance required of key stakeholders in the educational setting. Further, school-based management of concussion has distinct advantages that can be leveraged. Although schools are often over-burdened with regulations and requirements regarding practice, concussion management in schools is effective for several reasons:

- Concussions affect school performance.
- Teachers and educators are already familiar with addressing student needs from a behavioural perspective, whether from familiarity with general classroom experiences or from working with specific models.[1] This creates a consistent environment and a level of training that may be suited for concussion management.
- Every school has access to school nursing services. Some schools will have a School Nurse on site. Nurses, as qualified health-care professionals, are in a position to provide liaison with the health services, information, and advice to schools in implementing a plan to support a student recovering from concussion.
- All schools have qualified First Aiders. These may be required to provide a first-responder service for sports-related and other school-based concussions.
- Concussion management requires regular monitoring. This monitoring is more easily accomplished in schools as students are already there.
- A student may sustain a concussion at a time of public

[1] Such familiarity may come from general classroom experience and from working within specific models such as Response to Intervention (RTI: Fletcher, Francis, Morris, Ryan, 2005) and Positive Behavioural Support (PBS: Carr & Sidenar, 2002; Gresham, McIntrye, Olson-Tinker, Dolstra, McLuaghlin & Van, 2004; Öğülmüş & Vuran, 2016).

examinations, such as GCSEs or A levels. In this situation the school may need to make an application to the Awarding Body for special consideration based on the school's assessment of the student's needs at that point in time.

- Schools already have established approaches and structures for addressing students with medical conditions and/or special educational needs, whether these are long or short term.

This last point is an important one. All schools in England, Northern Ireland and Wales are required to ensure there is a qualified teacher designated as a Special Needs Co-ordinator (SENCO) for the school. Scotland has Special Needs Assistants. This position is a strategic one for determining the development of whole school SEND policy and provision. Schools are also required to have a named person with overall responsibility for policy implementation for students with medical conditions.

Further, the expertise and structures currently exist in schools to develop an Educational Health Care Plan (EHC) or Individual Health Care Plan as appropriate to the need of individual students. This level of familiarity for school staff could mitigate stressors associated with incorporating additional programming for students. Lastly, while the implementation of these programmes tends to focus on developmental and behavioural issues, their presence in school culture creates a consistent environment and a level of training that may be suited for concussion management.

ASSESSMENT FOR INTERVENTION AND "RESPONSE TO INTERVENTION"

Students recovering from concussion may face difficulties in their return to the learning process (transition) and may struggle with specific aspects of their learning or the environment. In this instance, it is important that the student's needs in the regular classroom environment are assessed and appropriate adjustments are made. Such changes might include some one-to-one support, extra time to complete assignments or minor curriculum changes. These adjustments may only be necessary for a short time, so should be monitored and adapted, depending upon the student's response. If the student is not responding to these adjustments, a more in-depth clinical assessment will be needed to target the support more effectively but generally this type of intervention reduces the need for lengthy and expensive full, clinical evaluations.

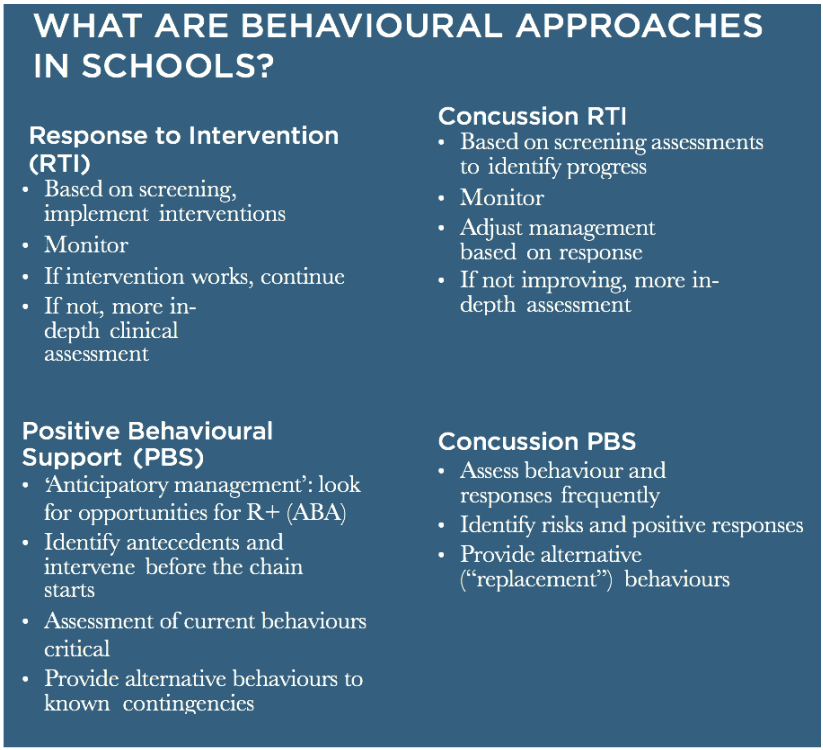
In the US an approach called Response to Intervention (RTI) has been developed and implemented. The aim of RTI is to improve student academic skills within the regular education setting; that is, without having to engage in the lengthy disability identification process. This type of intervention reduces the need for full clinical evaluations for students and staff procedures that are lengthy and expensive. In RTI, the student body is screened for performance on basic skills. Students are subsequently categorised into one of three levels of performance based on their percentile ranks from the screening. Students who are identified as "at-risk" receive enhanced regular education instruction, including additional time for instruction and minor programmatic changes. Should those students demonstrate progress with enhanced instruction, they continue with this intervention until they are able to meet normal curricular requirements without it. Such students are said to have responded to the intervention. Students scoring below the 10th percentile may require more in-depth clinical assessment, as they are possibly in need of specialised instruction (special education services through an Individual Education Plan (IEP). When students struggle with the return-to-learn process, their challenges can be addressed in a similar manner to the RTI model. The student's needs in the classroom environment are assessed and appropriate adjustments are made. Management is altered depending upon the child's response to ongoing monitoring. If the child is not responding to those adjustments, a more in-depth clinical assessment is provided to best direct care.

POSITIVE BEHAVIOURAL SUPPORT (PBS)

Positive Behavioural Support (PBS) has become the most utilised and effective method of behavioural management in schools in the US. PBS is rooted in behaviour analysis; it focuses on prevention, active supervision, pre-correction, and explicit timing.

Positive Behavioural Support helps identify the reason for the behaviour, to better meet the needs of the student, and reduce the likelihood of the behaviour returning. It considers the student as a whole, including the impact of any traumatic events, such as a concussion. It is proactive and preventative, creating supportive physical and social environments. Its use should be evidence-based and may involve input from different professionals.

While PBS is implemented primarily to address chronic maladaptive or problematic behaviours, these methods can also serve as a means for identifying barriers to compliance with rehabilitation.



IV. INDIVIDUAL RECOVERY

A partnership between school and health services

A student who suffers a concussion, or indeed a suspected concussion, will require medical attention. Broadly speaking, the medical services provide two main functions: providing acute care services, or services immediately following an injury, and providing post-acute services, services occurring at some point later in recovery to those who do not 'recover' in an expected amount of time.

However, because sports activities, whether at school or in the community, are on the front-line of the incidence of concussion, coaches, Physical Education (PE) teachers or first-aiders are often in a position to identify acute or on-field injuries. In this way, schools may provide some services commonly associated with medical professionals.

Post-acute management may also be provided in the school setting. After an injury has been identified or diagnosed, schools have a responsibility to ensure students are returned to learn and to play as safely as possible. PE staff and coaches are responsible for enabling students to be returned safely to sporting activities. Teachers and other school personnel will also need to manage the students as they return to the classroom after concussion.

Once a concussion has been identified, is treated by a doctor, and the student returns to (some level of) classroom activity, the school needs to take the necessary steps to prevent further injury or prolonged recovery. This prevention occurs primarily through management of activity levels in school and sport. The vast majority of sports concussions can be managed through school-based programmes, which at their best can mirror some professional concussion services.

Consensus guidelines from several professional organisations broadly agree that once students have been diagnosed with a concussion, they should not return to sporting activities until their injury-related symptoms, cognition, and balance have returned to normal. Some school programmes and or medical clinics provide baseline testing as a means to enhance post-injury assessment,although this practice is not required by any statute, and indeed has been questioned.

The concept of baseline testing for those involved in sport was originated by neuropsychologist Jeffrey Barth (1983). Baseline scores are obtained pre-season so they may be compared with testing done after an injury has occurred. Comparing the results of these tests, helps decision-making regarding recovery.

Return-to-play guidelines also recommend that students participating in sport complete a series of increasingly challenging physical tests without return of symptoms before final clearance to play. These progressive physical tests are known as the "step-wise progression." Returning to full classroom functioning, or return to learn, should be a pre-requisite to returning to competition, or return to play.

The consensus from experts is that the return-to-play and return-to-learn processes should be facilitated by an interdisciplinary team of experts. Ruling out other medical complications and assessing symptoms are typically the realm of doctors; cognitive and neuropsychological testing, assessing mood

disorders and behaviour management are the realm of neuropsychologists; balance and vestibular function is the province of physiotherapists and specially trained audiologists. Visual functioning is increasingly seen as something to consider after a diagnosis of concussion: occupational therapists, optometrists and neuro-ophthalmologists are experts in these areas.

Estimates indicate that 80-90 percent of individuals recover from concussions within about two weeks. However, there are some patients whose recovery is more complex, and some may have a diagnosis of post-concussion syndrome (PCS). These individuals often experience a range of persistent symptoms, such as headache, dizziness, lethargy, poor sleep, difficulty reading or visual problems, cognitive complaints, anxiety, and depression. Young people are at school every day and their actions are observable and more manageable, so again the school has a key role to play. However, for people who require a longer recovery time, further medical intervention will be necessary.

The University of Pittsburgh Medical Center Sports Medicine Concussion Program (UPMC), serves as an excellent model of good practice. At UPMC, after a concussion has occurred, a neuropsychologist provides the initial examination of symptoms, cognition, and balance. Other models may have a registered nurse or athletic trainer complete the initial evaluation. The depth and quality of this evaluation are critical. Most importantly, a detailed history is also obtained. If indicated in the interview and examination, a referral is made for further assessment and treatment of any dysfunctional system. These systems may include emotional responses, behaviour, cognition, headache, vestibular disorders or vision.

In summary, the time-course of concussion resolution is rapid, but the risks of repeat injury or prolonged recovery make close supervision and management an important prevention strategy. Schools are where young people are every day, so their actions are observable and more manageable. Thus, schools present the best and most consistent opportunity for active management of concussion.

V. MANUAL LAYOUT

We have attempted to make this manual user-friendly. At the beginning of each chapter specific learning objectives are identified. These learning objectives are felt to be the most important aspects of the text for the reader. These objectives were the focus of the knowledge test referred to in the study above. Key points are found at the end of each chapter that reinforce the learning objectives. Vignettes are sprinkled throughout to highlight concepts and enhance comprehension. These vignettes are taken from our own clinical cases and experiences. While intended primarily as a manual, it has served as a textbook for some classes.

Knowledge needs differ. A unique feature of this text is the identification of Constituent Competencies found in the table below. These Constituent Competencies indicate minimum specific knowledge elements that key personnel need in order to safely return students to the classroom and playing field following a concussion.