

RESEARCH ARTICLE

Establishing Consensus for Essential Elements in Returning to Learn Following a Concussion

KAREN McAVOY, PsyD^a  BRENDA EAGAN-JOHNSON, EdD, CBIST^b  ROSALIE DYMACEK, PhD^c STEPHEN HOOPER, PhD^d MELISSA McCART, DEd^e
JANET TYLER, PhD, CBIST^f

ABSTRACT

BACKGROUND: Returning to learn following a concussion is the process of managing a student's recovery during the school day by implementation of academic supports with varying intensity. Due to a lack of consensus or even guidance on Return to Learn, this paper set out to establish cross discipline consensus on some essential elements of Return to Learn using a Delphi method.

METHODS: Sixteen national organizations participated in a Delphi process to reach consensus on overarching themes of Return to Learn focused on: returning a student to school, composition of the school-based concussion management team, progress-monitoring, educational safeguards, neuropsychological testing, and legislation. Two rounds of questionnaires were disseminated via email using a Delphi process. Consensus was established during round 2.

RESULTS: Twelve national organizations were able to reach consensus and endorse 13 essential elements of Return to Learn following a concussion.

CONCLUSIONS: There continues to be limited research on concussion Return to Learn leading to confusion in the field. In this paper, we demonstrate consensus on a number of essential elements, from a wide variety of professional disciplines who participate in the care of students following a concussion, as a starting place for some guidance on Return to Learn.

Keywords: concussion; traumatic brain injury; return to learn; return to play; interdisciplinary team; section 504; individual health care plan.

Citation: McAvoy K, Eagan-Johnson B, Dymacek R, Hooper S, McCart M, Tyler J. Establishing consensus for essential elements in returning to learn following a concussion. *J Sch Health.* 2020; DOI: 10.1111/josh.12949

Received on July 18, 2019

Accepted on March 30, 2020

Returning a student to the learning environment following a concussion is a crucial aspect of proper school-based management. To date, few evidence-based guidelines have been published for Return to Learn following a concussion.¹ Best practices are slowly emerging from clinical and practical rationales, but significant confusion regarding types of academic supports to employ, as well as specific management roles and responsibilities remains. A review of 35 articles on Return to Learn identified contradictory data and lack of

consensus regarding “academic outcomes, physician recommendations, length of time to fully Return to Learn, concussion-related symptom difficulties, and academic accommodations/guidelines.”¹ Researchers cite variability in methodology and a lack of definition agreement as contributing factors to the absence of Return to Learn protocols and guidelines, calling for more rigorous research.¹ Additionally, most of the school-based Return to Learn recommendations in the literature have been written by health care providers²⁻⁶ (physicians, athletic trainers, neuropsychologists),

^aDirector, (karenmcavoy11@gmail.com), Center for Concussion Rocky Mountain Hospital for Children, 10107 RidgeGate Pkwy, Suite #310, Lone Tree, CO 80124.

^bState Program Coordinator, (beagan.johnson@gmail.com), BrainSTEPS Brain Injury School Consulting Program, 1891 Old State Road, New Castle, PA 16101.

^cNebraska Department of Education.

^dAssociate Dean and Chair, (stephen_hooper@med.unc.edu), Department of Allied Health Sciences, University of North Carolina, 333 S. Columbia Street, Suite 304, Chapel Hill, NC 27514.

^eProgram Coordinator, (mmcart@uoregon.edu), Center on Brain Injury Research and Training, Rainier Building, 1244 Walnut Street, Suite 220, Eugene, OR 97403.

^fSenior Brain Injury Consultant, (tyler_j@cde.state.co.us), Health and Wellness, Colorado Department of Education, 201 East Colfax Avenue, Denver, CO 80203.

Address correspondence to: Brenda Eagan-Johnson, State Program Coordinator, (beagan.johnson@gmail.com), BrainSTEPS Brain Injury School Consulting Program, 1891 Old State Road, New Castle, PA 16101.

The authors acknowledge Juliet Haarbauer-Krupa, PhD, US Centers for Disease Control and Prevention who served as an expert consensus and content collaborator.

rather than educators who are trained in pedagogy who understand the nuances of legal-educational safeguards within their profession. Due to the scarceness of empirical Return to Learn guidance, this paper aims to advance the field by providing clinically guided consensus-based practices inclusive of national education, medical, and rehabilitation representatives.

Return to Play legislation has brought attention to protecting student-athletes when returning to sports.⁷ However, data from the US Centers for Disease Control and Prevention determined the leading cause of traumatic brain injury related emergency department visits and hospitalizations for youth aged 15-24 years were from motor vehicle crashes and falls, not sports-related injuries.⁸ In a separate study, researchers discovered 82% of youth within one hospital system were not diagnosed with concussion in the emergency department. Instead, diagnosis was made by a primary care provider.⁹ To date, researchers have experienced difficulty tracking concussions because there is not a single pathway of care following injury. But what is known is that both student-athletes and non-athletes are sustaining concussions at rates far above other brain injury severities.⁸⁻¹⁰ Therefore, although Return to Play laws cover only student-athletes post-concussion who return to sports, schools must be prepared to support all students.

Whereas concussion recovery is favorable, with 70% of students recovering in 28 days,¹¹ potentially 30% of students experience prolonged symptoms. Symptoms often impact academic performance.¹²⁻¹⁴ A combination of confusion and caution about symptom provocation caused by cognitive exertion has led some medical providers to prohibit students from returning to school for weeks, months, or even until symptom-free. These practices raise concerns regarding iatrogenic contributors leading to academic failure and consequences of social isolation, depression, and anxiety. The challenge for schools in successfully transitioning a student back is to strike a balance between the initial period of acute rest and the gradual reintroduction of activity.

In 2011, the Nittany Summit on Childhood Brain Injury was held in Pennsylvania to develop general recommendations for building statewide school capacity to support students with all severities of acquired brain injuries. This group of pediatric brain injury experts went on to develop the National Collaborative on Children's Brain Injury. The National Collaborative on Children's Brain Injury is a national multidisciplinary group (Table 1) focused on improving school-related acquired brain injury supports and services. In 2016, a National Collaborative on Children's Brain Injury Return to Learn workgroup was established to provide

Table 1. National Collaborative on Children's Brain Injury Membership List

Name	Affiliation
Gavin Attwood	United States Brain Injury Alliance
Keri Bennett	Nebraska Vocational Rehabilitation
Leslie Caplan, PhD	National Institute on Disability, Independent Living, and Rehabilitation Research, (NIDILRR)
Amy Colberg	Brain Injury Association of America
Paula Denslow	Parent, Tennessee Disability Coalition, Project BRAIN
Roberta DePompei, PhD	The University of Akron
Judy Dettmer	Colorado Department of Human Services, Brain Injury Program
Rose Dymacek, PhD	Nebraska Department of Education, Special Education
Brenda Eagan-Johnson, EdD	BrainSTEPS Brain Injury School Re-Entry Consulting Program, Brain Injury Association of Pennsylvania
Drew Nagele, PsyD	Brain Injury Association of America, Academy for Certification of Brain Injury Specialists
Liane Gelman-Wegener	Parent
Gerry Gioia, PhD	Safe Concussion Outcome Recovery & Education (SCORE) Program, Children's National Health System
Ann Glang, PhD	Center on Brain Injury Research and Training, University of Oregon
Wayne Gordan, PhD	Icahn School of Medicine at Mount Sinai Medical Center
Kristin Hildebrant	Disability Rights Ohio
Stephen R. Hooper, PhD	Department of Allied Health Sciences School of Medicine, University of North Carolina-Chapel Hill
Heather Hotchkiss	Colorado Department of Education
Susan Kauffman, EdS	United States Department of Education, Office of Special Education Programs
Karen McAvoy, PsyD	Director, Center for Concussion, Rocky Mountain Hospital for Children
Melissa McCart, DEd	Center on Brain Injury Research and Training, University of Oregon
A. Cate Miller, PhD	National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)
Bonnie Nelson	Ohio Department of Education, Office for Exceptional Children
Ron Savage, EdD	North American Brain Injury Society
Tina Turgel	Division of Services for Children with Special Health Needs, Maternal and Child Health Bureau Health Resources and Services Administration
Janet Tyler, PhD	Colorado Department of Education
Susan Vaughn	National Association of State Head Injury Administrators
Shari Wade, PhD	Cincinnati Children's Hospital Medical Center, University of Cincinnati College of Medicine

guidance to schools when supporting students post-concussion. The workgroup was tasked with gathering representative opinion about the essential elements of Return to Learn by establishing the first national concussion Return to Learn consensus.

Professional roles of the core workgroup included:

- 2 brain injury consultants who work for state departments of education (Colorado and Kansas);
- 2 educationally based directors of statewide acquired brain injury school re-entry, consultation, and training programs (Oregon and Pennsylvania);
- 1 dually credentialed clinical/school psychologist-pediatric concussion clinic clinical director;
- 1 neuropsychologist.

METHODS

A Delphi process is a widely used method for achieving convergence of expert opinion on real-world knowledge within a specific topic area.¹⁵ Due to the paucity of research available, the Delphi process was chosen to supplement current research gaps with consensus-based guidelines. A traditional or modified Delphi process includes several rounds of surveys. Typically, consensus is achieved within 3-4 rounds. Links to surveys are sent to selected experts by email, and responses are anonymous among participants.

Step 1: Identify, Select, and Invite Expert Panel

In 2016, the National Collaborative on Children's Brain Injury Return to Learn workgroup identified and invited 38 organizations involved in pediatrics, sports medicine, education, rehabilitation, brain injury advocacy, epidemiology, school nursing, school psychology, and neuropsychology to send one representative to participate. The initial range of invited disciplines varied widely, and purposefully without restriction. The Department of Defense was invited, representing the 1.2 million military students worldwide. A representative from the National Association of State Directors of Special Education was invited to advise on educational language and law. Two authors of the 4th and 5th International Conferences on Concussion in Sport self-selected to serve as consultants. Of the 38 invited national organizations, 16 agreed to participate in the process. A list of the national organizations who engaged in the Delphi process can be found in Table 2.

Step 2: Overview of Topic: Round One

A traditional Delphi process was used for round one. In early 2016, a broad collection of peer-reviewed articles and promising practice guidelines were compiled into a literature review. Topics directly and tangentially related to Return to Learn (such as return to school, sports, driving on school grounds, career and

Table 2. Participation in the RTL Delphi Consensus Process

National Organization	RTL Consensus Representative
National organizations and the representative who completed both rounds (13 organizations)	
American Academy of Pediatrics	Mark Halstead, MD
American Academy of Pediatric Neuropsychology	Cecil Reynolds, PhD
American Medical Society for Sports Medicine	Kelsey Logan, MD
American Physical Therapy Association	Catherine Quatman-Yates, DPT, PhD
Defense and Veteran's Brain Injury Center	Scott Livingston, PhD, PT, ATC
High School RIO: Reporting Information Online	R. Dawn Comstock, PhD
National Athletic Trainers' Association	Tamara McLeod, PhD, ATC, FNATA
National Association of School Nurses	Nina Fekaris, MS, BSN, RN, NCSN
National Association of School Psychologists	Eric Rossen, PhD, NCSPP
National Association of State Head Injury Administrators	Judy Dettmer, BS
National Federation of State High School Associations	Bob Colgate
North American Brain Injury Society	Ron Savage, EdD
United States Brain Injury Alliance	Geoff Lauer, MA
National organizations who completed one round (2 organizations)	
American Academy of Neurology	Christopher Giza, MD
Brain Injury Association of America	Susan Connors Tina Trudel, PhD
Affiliation	Expert Consensus and/or Content Consultant Advisors
The 4th and 5th International Conferences on Concussion in Sport held in Zurich, November 2012 and Berlin, October 2016	Stan A. Herring, MD Margot Putukian, MD
National Association of State Directors of Special Education	Nancy Reeder, JD, MSW

technical school, and extracurricular activities) were included. To allow consensus participants the opportunity to determine crucial elements of Return to Learn using their votes, the National Collaborative on Children's Brain Injury workgroup began by intentionally including the widest breadth of Return to Learn topics currently available in the literature in the round one survey.

The first-round online survey was sent to participants in May 2016 and was completed by 16 national organizations' representatives. The limitation of anonymity did not allow for back and forth discussion between the Delphi participants. Dr. Karen McAvoy and Dr. Brenda Eagan-Johnson, the workgroup co-leads, compiled the results. Both had access to

the identities of participants for the purpose of sending out completion reminders. Delphi participants were provided a binary yes or no choice for 77 questions and were encouraged to provide open-ended comments to elicit content and language feedback regarding essential elements of Return to Learn. Content embedded in the questions receiving positive responses was then consolidated into 13 consensus questions for round 2. Content embedded in questions receiving negative responses were not advanced to round 2. Open-ended comments were analyzed by the content consultants to ensure appropriate citation of federal educational law and fidelity to the consensus process. The process of narrowing down content from round one to round 2 (topic areas answered in the affirmative) led to 6 essential elements of Return to Learn themes identified by the Delphi participants:

- Cognitive rest related to return to school;
- Concussion management teams;
- Progress monitoring;
- Ascending levels of academic support;
- Neuropsychological testing; and
- Return to Learn legislation.

As a result of round one, the National Collaborative on Children's Brain Injury Return to Learn workgroup developed 3 overarching themes to direct the development of round 2 questions.

1. What are the main facets of a systematic promising practices plan for Return to Learn following concussion that would promote the management of all students who experience concussion?
How should schools monitor symptom resolution during the Return to Learn process?
How should schools monitor academic performance during the Return to Learn process?
How are school-based services constructed for students following a concussion?
2. What are the important aspects of concussion and school management about which health care professionals, educators, students, and parents should be educated as part of their potential future involvement and communication with school-based concussion interdisciplinary teams?
3. Does concussion Return to Learn need to be legislated?
How do state concussion laws and the educational needs of all students interact?

Step 3: Refinement of Questions: Round 2

Following the analysis of round one, consultant input, and participants' comments, the National Collaborative on Children's Brain Injury Return to Learn workgroup developed 13 statements and one open-ended question for round 2. In October 2016, the

round 2 online survey was electronically distributed to the 16 national organization representatives who completed round one. The survey queried participants' level of agreement on a 4-point Likert-style scale ranging from strongly disagree (1) to strongly agree (4). Question 14 was open-ended. Delphi participants were again provided an extensive review of Return to Learn empirical data and promising practices with the 13 statements. Participants were asked to rank their level of agreement on the 13 statements listed in Table 3.

RESULTS

Thirteen of 16 surveys were completed in round 2. The 13 organizations who completed round 2 answered agree or strongly agree to all 13 consensus statements. Following the established Delphi process, when 70% of participants rate 3 or higher on a 4-point Likert-scale, consensus is achieved.¹⁶ Therefore, strong consensus was achieved during round 2 with 100% agreement on all statements.

Eleven of the national organizations provided formal endorsement (Table 4). Two of the 13 organizations cited complicated endorsement procedures as the reason they could not provide formal endorsement. However, both organizations offered promotion and dissemination of the consensus paper. Two organizations were not represented in round 2 but requested the ability to review the final 13 agreed upon consensus statements. Following review, one organization then provided formal endorsement and one provided affirmation of value.

The 13 final Return to Learn consensus statements are listed below. Clarifying language was requested by 3 participants for 3 of the original statements, noted below in italics.

Cognitive Rest

1. Students recovering from a concussion often need an initial period of relatively greater cognitive and physical rest, the timing and specific nature of which will vary from student to student.
2. An estimated 70% of students recover from a concussion in 28 days with a gradual reduction of symptoms.¹¹ This supports a gradual return to social and cognitive activity at home and school over the first 4 weeks of recovery. *The speed of re-introduction will vary and must be individualized.*
3. Numerous positive social and emotional benefits are gained by being at school, even during recovery from a concussion. Unless contraindicated by a serious medical complication, a student with a concussion should return to school/learn even before symptoms are 100% resolved, provided the student can manage fluctuating symptoms and the

Table 3. National Collaborative on Children’s Brain Injury Concussion Return to Learn 13 Consensus Statements

- Students recovering from a concussion often need an initial period of relatively greater cognitive and physical rest, the timing and specific nature of which will vary from student to student
- An estimated 70% of students recover from a concussion in 28 days with a gradual reduction of symptoms.¹¹ This supports a gradual return to social and cognitive activity at home and school over the first 4 weeks of recovery. The speed of re-introduction will vary and must be individualized
- Numerous positive social and emotional benefits are gained by being at school, even during recovery from a concussion. Unless contraindicated by a serious medical complication, a student with a concussion should return to school/learn even before symptoms are 100% resolved, provided the student can manage fluctuating symptoms, and the school concussion management team has received education and resources to support the student in the educational setting
- A concussion management team should include representatives from school academic, school physical/health services, medical, and family/student domains who work collaboratively to develop and adjust an individualized Return to Learn plan.
- A family is advised to seek out medical evaluation, specifically, a timely medical evaluation, treatment, and clearance for each concussion (regardless of the age of the student or the mechanism of injury)
- Academic adjustments written into the Return to Learn plan are best overseen and directed by school professionals with dedicated expertise and knowledge of educational law, policy, and curriculum, guiding a collaborative Return to Learn process among the members of the concussion management team
- Progress monitoring should include symptom monitoring, no less than one time per week
- Progress monitoring should include academic monitoring, no less than one time per week
- Schools have existing educational safeguards to support all students who struggle academically, medically, psychologically, and socially at school. Concussion can be included and managed using the existing educational safeguards
- Schools should provide increasing tiers of academic support for the students with concussions that do not resolve in a typical timeframe
- Schools may apply their existing tiers of support for students with concussion and need not delay or postpone academic supports while awaiting community health care input if medical input is not timely or available
- Data from a neuropsychological evaluation, is not required, but can be helpful and should be considered and may be incorporated into a Return to Learn plan if available
- Existing educational safeguards exist for students, although they are little known and underutilized for concussion. They are prompt, flexible, and systematic for all concussed student athletes and non-athletes with academic needs. Return to Learn can be robust, widespread, systematized, and sustainable if embedded into existing educational frameworks

Table 4. National Organizations Who Endorse the 13 Return to Learn Consensus Statements

National Organization

- American Academy of Pediatric Neuropsychology
- American Medical Society for Sports Medicine
- Brain Injury Association of America
- Defense and Veteran’s Brain Injury Center
- High School RIO: Reporting Information Online
- National Athletic Trainers’ Association
- National Association of School Nurses
- National Association of School Psychologists
- National Association of State Head Injury Administrators
- National Federation of State High School Associations
- North American Brain Injury Society
- United States Brain Injury Alliance

school concussion management team has received education and resources to support the student in the educational setting.

Concussion Management Team Composition

4. A concussion management team should include representatives from school academic, school physical/health services, medical, and family/student domains who work collaboratively to develop and adjust an individualized Return to Learn plan.
5. A family is advised to seek out medical evaluation, specifically a timely medical evaluation, treatment,

and clearance for each concussion (regardless of the age of the student or the mechanism of injury).

6. Academic adjustments written into the Return to Learn plan are best overseen and directed by school professionals with dedicated expertise and knowledge of educational law, policy, and curriculum, guiding a collaborative Return to Learn process among the members of the concussion management team.

Progress Monitoring

7. Progress monitoring should include symptom monitoring, no less than one time per week.
8. Progress monitoring should include academic monitoring, no less than one time per week.

Ascending Levels of Academic Support

9. Schools have existing educational safeguards to support all students who struggle academically, medically, psychologically, and socially at school. Concussion can be included and managed using the existing educational safeguards.
10. Schools should provide increasing tiers of academic support for students with concussions that do not resolve in a typical timeframe.
11. Schools may apply their existing tiers of support for students with concussion and need not delay

or postpone academic supports while awaiting community health care input if medical input is not timely or available.

Neuropsychological Testing

12. Data from a neuropsychological evaluation *is not required but* can be helpful, should be considered, and may be incorporated into a Return to Learn plan if available.

Return to Learn Legislation

13. Existing educational safeguards exist for students. They are prompt, flexible, and systematic for all concussed student athletes and non-athletes with academic needs. Return to Learn can be robust, widespread, systematized, and sustainable if embedded into existing educational frameworks.

DISCUSSION

Whereas an extensive review of all literature in the categories below is beyond the scope of this paper, a summary of the relevant factors considered by the Delphi participants is outlined in more detail below.

Cognitive Rest

Current empirical evidence suggests a short period of one to 2 days rest followed by a gradual return to activity, a moderated amount of activity, or a sub-threshold level of activity.¹⁷⁻¹⁹ Though not evidence-based, a progressive return to school process has demonstrated clinical utility.²⁰⁻²⁴ This consensus paper recommends that a student should receive an early and individualized amount of cognitive and physical rest.

Current Return to Learn research cautions against returning students to too much cognitive exertion too quickly.²⁵ However, this does not mean students should remain at home for extended periods of time because school absence for any reason can have deleterious effects.²⁵⁻²⁷ The consensus results align with literature suggesting that Return to Learn must be individualized and exact recovery cannot be predetermined.

Education is paramount. Parents would benefit from education and empowerment to advocate for their child's return to school, which should be paired with timely and relevant input from a health care provider (if available), or a school-based health care provider (school nurse) if a community health care provider is unavailable. Additionally, because school reintegration needs to occur swiftly, symptom presentation changes rapidly, and most concussions resolve within the first month, the results of the Delphi consensus suggest that Return to Learn plans will be most effective if

teachers receive prior training on concussion strategies to support students.

Concussion Management Team Composition

An interdisciplinary concussion management team approach is deemed necessary by consensus. The consensus recommends that team members include representation from the following:

- School-Based Team Members:
 - a. Physical/Health Services role- (school physician and/or school nurse when present, coach, athletic trainer)
 - b. Academic role- (school nurse, school psychologist, school social worker, school counselor, teacher, school administrator, or student support/assistance teams and related services).^{21,28,29}
- Student and Family Team Member(s): (student, parents, guardian)
- Medical/Health care Team Member(s): (primary care physician, health care provider, sports medicine physician, athletic trainer, school nurse, neuropsychologist, clinic-based psychologist, physical therapist)

In smaller schools, one person may need to cover more than one role. Essential to the specific team representation is not the availability of explicit job descriptions, but the necessary skill set for each team member.

Practical implementation of the consensus findings dictate that academic supports are best overseen and directed by school staff. The School-Based Academic Team Member uses their specific expertise of educational pedagogy, classroom management, theories of learning, and educational law to individualize environmental factors and academic adaptations for the student based on presenting symptoms and the student's current and prior academic performance baseline. The School-Based Academic Team Member serves in the primary role of directing and overseeing the educational components of Return to Learn management. This includes collaborating and communicating with health care providers (when available) and parents/guardians. The School-Based Physical/Health Services Team Member uses their knowledge of the student's reported physical symptoms as they pertain to comfort and symptom management at school, as well as Return to Play guideline adherence. These school-base team member representatives work closely together.

Communication among members of the interdisciplinary concussion management team is imperative, and each team member should practice within their scope of training. For example, a health care provider

may share a student's diagnosis of convergence insufficiency with the school-based team members; it is then the responsibility of the school to determine appropriate academic supports to alleviate the learning effects that may result from convergence insufficiency. While it is often helpful for a health care provider to offer academic suggestions related to a medical finding, it is a school's responsibility to determine if a presenting medical condition interferes with learning and if so, how it can be appropriately supported at school.

Consensus findings suggest that every student post-concussion should seek evaluation, treatment, and clearance from a medical provider. However, no medical clearance has been legislated for return to school, Return to Learn, or the application or removal of academic supports. It is also important to note that some families choose not to pursue medical involvement:

- if a student does not fall under Return to Play legislation;
- if a student does not have access to medical insurance;
- if a student does not have access to medical care; or
- if the family's religious or cultural beliefs prohibit medical intervention.

In those cases, it is still the responsibility of the school to manage the effects of the concussion on the student's ability to learn, behave, and progress academically, regardless of mechanism of injury, student age, or family circumstances regarding medical care.

Return to Learn Progress Monitoring

Although no empirical data in the concussion literature requires regular progress-monitoring of symptoms and academic need, promising practices have been adapted from the principles of learning and applied to concussion to ensure that interventions are data-driven and show fidelity. Delphi participants recommend regular symptom and academic monitoring by school professionals one time per week during the acute phase.

Educational Safeguards

There are two types of school supports available to students: informal and formal. The majority of students will only require *informal* post-concussion supports provided by teachers and monitored by the school-based concussion management team. Schools are required to support all students experiencing learning or behavior impacts resulting from a medical, psychological, behavioral, or social condition.³⁰ Consensus participants recommend that schools consider concussion as a health condition that naturally falls

within a school's existing system of supports. School supports generally begin with early screening, assessment, and intervention within general education and progress to more intense supports depending on collected data and educational need. Commonly used frameworks include ascending levels of support, often called Multi-Tiered System of Support³¹ or Response to Intervention.³²

Formal educational safeguards may also be provided in the form of an Individualized Health care Plans,³³ Section 504 Plans,³⁴ or Individualized Education Programs for special education under the Individuals with Disabilities Education Act.³⁵ When a student experiences a concussion that rises to the level of requiring formal supports, supports should be determined in collaboration with the student, family, and health care provider, if possible. A school's pre-existing tiered level of support already provides for identification, intervention, and an obligation to support struggling students. Return to Learn for concussion falls naturally into these existing educational frameworks used in schools for all students with medical conditions.

It is important to note that although a health care provider can request a school consider a 504 Plan or an Individualized Education Programs for a student with a concussion, a health care provider cannot prescribe such plans. Similarly, a parent can request consideration for a 504 Plan or Individualized Education Programs for their child, but a school-based multidisciplinary evaluation must take place for final determination. It is the school's responsibility to make data-driven decisions regarding all requests for evaluation for formal educational supports and services.²⁹ The decision to grant eligibility for formal supports should be made by the school in partnership with the parent and health care provider, if available. A parent may pursue due process if they disagree with the outcome of the final decision.³⁵

Neuropsychological Testing

The consensus findings indicate that a neuropsychological evaluation can be a helpful addition to a Return to Learn plan, but it is not a requirement. Because recovery rates are typically rapid following a concussion, few require a comprehensive neuropsychological evaluation except in cases of a complicated or protracted recovery.

Return to Learn Legislation

A few states have enacted Return to Learn legislation or provisions in their Return to Play legislation.³⁶ The pros of enacting Return to Learn legislation include:

- increased awareness of concussion and resulting learning impacts among educators;

- potentially improved and more consistent communication among school, family, and health care providers who serve on the concussion management team; and
- higher school accountability for Return to Learn academic supports in school.

The drawbacks of enacting Return to Learn legislation include:

- may be interpreted to apply only to sports-related concussions if Return to Learn language is written into current or existing Return to Play legislation;
- does not provide the ability to direct specific Return to Learn guidelines toward school districts which exert local control;
- does not account for the varying needs and resources of districts;
- may not be necessary in light of already existing federal educational laws requiring districts to support all students regardless of medical diagnosis (even temporary);
- does not include funding for school personnel training; and
- could increase the potential for litigation.

In essence, legislating Return to Learn remains a narrow solution.

IMPLICATIONS FOR SCHOOL HEALTH

Researchers have discovered that school staff³⁷⁻⁴² and medical providers⁴³⁻⁴⁶ have varying knowledge or efficacy when it comes to student concussion management. Therefore, a concerted statewide, department of education endorsed effort to train school staff on aspects of Return to Learn concussion management would be beneficial. Practical implications from this paper lead to the following Return to Learn recommendations:

- State and federal departments of education need to play a more active role in providing statewide, systematic endorsement of Return to Learn policies, procedures, and guidelines for schools.^{47,48}
- Although general education teachers and administrators might have received little to no concussion training, many districts utilize school-based providers (occupational therapists, physical therapists, speech-language pathologists) who have experience in supporting students following a brain injury. Their expertise may be helpful in supporting fellow educators of students post-concussion.
- School administrators should receive specific targeted training on the legal aspects of Return to Learn and Return to Play. This will help reinforce and ensure that students who sustain concussions receive appropriate academic supports from

teachers. Administrator training can also potentially alleviate liability issues related to an unprepared school system. Specifically, for student athletes, Return to Learn is not just best practice but also a critical step prior to Return to Play. A successful return to learn is a determinant that a student-athlete is ready to progress through the school's established return to sports process.

- Schools and especially state departments of education need to assume responsibility for holding Return to Learn trainings for all school staff. Having state department of education endorsement for a Return to Learn school protocol is a strong message that schools must be prepared to support all students appropriately.⁴⁷
- Research regarding effective educator training can be applied to Return to Learn trainings. Staff trainings should include increased awareness of building staff, on-site modeling and feedback, and general work with stakeholders to implement changes at the school and district levels.^{47,49}

Assembling this Return to Learn consensus paper has revealed many clinically based promising practices, but it has also raised further questions and concerns about the lack of evidence-based practices. This consensus paper highlights the lack of well-controlled research and investigation of various issues referenced within, which are imperative to guide effective practice moving forward. However, the Return to Learn consensus process was limited by the self-selection of individuals and national organizations who were willing to participate. Therefore, the data may not be an adequate representation of all Return to Learn views. While all disciplines discussed within this paper have an important role on the Return to Learn concussion management teams, concussion-prepared educators with their expertise in pedagogy and resulting understanding of educational safeguards, school compulsory education, and special education law are the professionals best poised to serve as Return to Learn leaders for school-day academic decision-making. The 13 Return to Learn consensus statements will serve as a critical guide for professionals charged with ensuring students who experience concussions are appropriately supported during the school day.

Human Subjects Approval Statement

This research is exempt from IRB Review under the Federal Regulations for Protection of Human Research Subjects (45 CFR 46), Category 2—surveys, interviews, educational tests, public observations.

Conflict of Interest

Dr. McAvoy is a training consultant through Get Schooled on Concussions. Dr. Eagan-Johnson has no

conflicts to disclose. Ms. Dymacek has no conflicts to disclose. Dr. Hooper has no conflicts to disclose. Dr. McCart has no conflicts to disclose. Dr. Tyler has no conflicts to disclose.

REFERENCES

1. O'Neill JA, Cox MK, Clay OJ, et al. A review of the literature on pediatric concussions and return-to-learn (RTL): implications for return to learn policy, research, and practice. *Rehabil Psychol*. 2017;62(3):300-323.
2. DeMatteo C, Stazyk K, Giglia L, et al. A balanced protocol for return to school for children and youth following concussive injury. *Clin Pediatr*. 2015;54(8):783-792.
3. DeMatteo C, McCauley D, Stazyk K, et al. Post-concussion return to play and return to school guidelines for children and youth: a scoping methodology. *Disabil Rehabil*. 2014;37(12):1107-1112.
4. Master C, Gioia G, Leddy J, Grady M. Importance of 'return to learn' in pediatric and adolescent concussion. *Pediatr Ann*. 2012;41(9):1-6.
5. McGrath N. Supporting the student-athlete's return to the classroom after a sport-related concussion. *J Athl Train*. 2010;45(5):492-498.
6. Sady MD, Vaughan CF, Gioia GA. School and the concussed youth—recommendations for concussion education and management. *Phys Med Rehabil Clin N Am*. 2011;22(4):701-719.
7. Lowry KM. State laws addressing youth sports-related traumatic brain injury and the future of concussion law and policy. *J Bus Tech L*. 2015;10(1):61-72.
8. Taylor C, Bell J, Breiding M, Xu L. Traumatic brain injury-related emergency department visits, hospitalizations, and death - United States, 2007 and 2013. *MMWR Surveill Summ*. 2017;66(9):1-16.
9. Arbogast K, Curry A, Pfeiffer M, et al. Point of health care entry for youth with concussion within a large pediatric care network. *JAMA Pediatr*. 2016;170(7):1-8.
10. Myers RK, Eagan-Brown BL, Conway AT, et al. Examining a statewide educational consulting program for pediatric brain injury. *Clin Pediatr*. 2017;57(6):645-655.
11. Zemek R, Barrowman N, Freedman SB, et al. Clinical risk score for persistent post-concussion symptoms among children with acute concussion in the ED. *JAMA*. 2016;315(10):1014-1025.
12. Wasserman EB, Bazarian JJ, Mapstone M, Block R, Van Wijngaarden E. Academic dysfunction after a concussion among US high school and college students. *Am J Public Health*. 2016;106(7):1247-1253.
13. Russell K, Hutchison M, Selci E, Leiter J, Chateau D, Ellis MJ. Academic outcomes in high school students after a concussion: a retrospective population-based analysis. *PLoS One*. 2016;11(10):e0165116.
14. Lowry R, Haarbauer-Krupa JK, Breiding MJ, Thigpan S, Rasberry CN, Lee SM. Concussion and academic impairment among US high school students. *Am J Prev Med*. 2019;57(6):733-740.
15. Hsu C, Sandford B. The Delphi technique: making sense of consensus. *PARE*. 2007;12(10):1-8.
16. Green P. The content of a college-level outdoor leadership course. Presented as part of Conference of the Northwest District Association for the American Alliance for Health, Physical Education, Recreation, and Dance; March 1982; Spokane, WA. Available at: <https://eric.ed.gov/?id=ED276546>. Accessed August 14, 2020.
17. Majerske CW, Mihalik JP, Ren D, et al. Concussion in sports: post-concussive activity levels, symptoms, and neurocognitive performance. *J Athl Train*. 2008;43(3):265-274.
18. Thomas DG, Apps JN, Hoffmann RG, McCrear M, Hammeke T. Benefits of strict rest after acute concussion: a randomized controlled trial. *Pediatrics*. 2015;135(2):213-223.
19. Gibson S, Nigrovic LE, O'Brien M, Meehan WP. The effect of recommending cognitive rest on recovery from sport-related concussion. *Brain Inj*. 2013;27(7-8):839-842.
20. Halstead ME, McAvoy KL, Devore CD, et al. Returning to learning following a concussion. *Pediatrics*. 2013;132(5):948-957.
21. BrainSTEPS and Pennsylvania Department of Education. Return to Learn after concussion: Recommended protocol. Return to Learn Concussion Management Team Training. 2017. Available at: <https://www.pattan.net/Publications/The-BrainSTEPS-Program-Return-to-Learn-After-Concussion>. Accessed March 3, 2020.
22. Baker JG, Rieger BP, McAvoy KL, et al. Principles for return to learn after concussion. *Int J Clin Pract*. 2014;68(11):1286-1288.
23. Gioia GA. Medical-school partnership in guiding return to school following mild traumatic brain injury in youth. *J Child Neurol*. 2016;31(1):93-108.
24. Oregon Concussion and Management Program. Concussion Management: Policy and Resource Handbook. 2011. Available at: <http://brain101.orcasin.com/2000/>. Accessed March 30, 2020.
25. Brown NJ, Mannix RC, O'Brien MJ, Gostine D, Collins MW, Meehan WP. Effect of cognitive activity level on duration of post-concussion symptoms. *Pediatrics*. 2014;133(2):1-6.
26. Coelho R, Fischer S, McKnight F, Matteson S, Schwartz T. The effects of early chronic absenteeism on third-grade academic achievement measures. In: Robert M, ed. *La Follette School of Public Affairs*, University of Wisconsin-Madison: Wisconsin Department of Public Instruction; 2015:1-42. Available at: <http://www.lafollette.wisc.edu/images/publications/workshops/2015-dpi-absenteeism.pdf>. Accessed March 20, 2020.
27. Roscigno CI, Fleig DK, Knafl KA. Parent management of the school reintegration needs of children and youth following moderate or severe traumatic brain injury. *Disabil Rehabil*. 2015;37(6):523-533.
28. McAvoy K. Rocky Mountain Youth Sports Medicine Institute, Center for Concussion REAP guidelines Available at: <http://www.rockymountainhospitalforchildren.com/sports-medicine/concussion-management/reap-guidelines.htm>. Accessed November 7, 2017.
29. Zirkel PA, Eagan Brown B. K-12 students with concussions: a legal perspective. *J Sch Nurs*. 2015;31(2):99-109.
30. McAvoy K, Eagan-Johnson B, Halstead M. Return to learn: transitioning to school and through ascending levels of academic support for students following concussion. *NeuroRehabilitation*. 2018;42(5):325-330.
31. Colorado Department of Education. Multi-Tier System of Support (MTSS). Available at: <https://www.cde.state.co.us/mtss>. Accessed September 14, 2017.
32. Center on Response to Intervention (RTI) Available at: www.rti4success.org. Accessed September 14, 2017.
33. National Association of School Nurses. Use of individualized healthcare plans to support school health services (position Statement). 2020. Available at: <https://www.nasn.org/nasn/advocacy/professional-practice-documents/position-statements/ps-ihps>. Accessed March 3, 2020.
34. Guidelines for Educators and Administrators for Implementing Section 504 of the Rehabilitation Act of 1973—Subpart D 2010. Available at: https://doe.sd.gov/oess/documents/sped_section504_Guidelines.pdf. Accessed April 3, 2016.
35. US Department of Education. Individuals with Disabilities Education Act (IDEA) 2004. Available at: <https://sites.ed.gov/idea/statuteregulations/>. Accessed November 8, 2017

36. Thompson LL, Lyons VH, McCart M, Herring SA, Rivara FP, Vavilala MS. Variations in state laws governing school reintegration following concussion. *Pediatrics*. 2016;138(6):e20162151.
37. Ettel D, Glang AE, Todis B, Davies SC. Traumatic brain injury: persistent misconceptions and knowledge gaps among educators. *Exceptionality Education International*. 2011;26(1):1-18.
38. Heyer GL, Weber KD, Rose SC, Perkins SQ, Schmittauer CE. High school principals' resources, knowledge, and practices regarding the returning student with concussion. *J Pediatr*. 2014;166(3):594-599.
39. Carzoo SA, Young JA, Pommering TL, Cuff SC. An evaluation of secondary school educators' knowledge of academic concussion management before and after a didactic presentation. *Athl Train Sports Health Care*. 2015;7(4):144-149.
40. Janson I, Nittoli V, White D, Tekulve K. Return-to-learn accommodations and concussion perceptions among Indiana high school principals. *J Head Trauma Rehabil*. 2019;34(1):10-17.
41. Dreer LE, Crowley MT, Cash A, O'Neill JA, Cox MK. Examination of teacher knowledge, dissemination preferences, and classroom management of student concussions. *Health Promot Pract*. 2017;18(3):428-436.
42. Weber ML, Welch CE, Parsons JT, McLeod TC. School nurses' familiarity and perceptions of academic accommodations for student-athletes following sport-related concussion. *J Sch Nurs*. 2015;31(2):146-154.
43. Zemek R, Eady K, Moreau K, et al. Knowledge of paediatric concussion among front-line primary care providers. *Paediatr Child Health*. 2014;19(9):475-480.
44. Salisbury D, Kolessar M, Callender L, Bennett M. Concussion knowledge among rehabilitation staff. *Proc (Bayl Univ Med Cent)*. 2017;30(1):33-37.
45. Hunt T, Harris L, Way D. The impact of concussion education on the knowledge and perceived expertise of novice health care professionals. *J Athl Train*. 2017;12(1):26-38.
46. Kaye AJ, Gallagher R, Callahan JM, Nance ML. Mild traumatic brain injury in the pediatric population: the role of the pediatrician in routine follow-up. *J Trauma Acute Care Surg*. 2010;68(6):1396-1400.
47. Gioia GA, Glang AE, Hooper SR, Eagan Brown B. Building statewide infrastructure for the academic support of students with mild traumatic brain injury. *J Head Trauma Rehabil*. 2016;31(6):397-406.
48. Dettmer J, Ettel D, Glang A, McAvoy KL. Building statewide infrastructure for effective educational services for students with TBI: promising practices and recommendations. *J Head Trauma Rehabil*. 2014;29(3):224-232.
49. Ylvisaker M, Todis B, Glang A, et al. Educating students with TBI: themes and recommendations. *J Head Trauma Rehabil*. 2001;16(1):76-93.