

# Concussion: Carry-Over In the Classroom

By Phil Hossler, ATC

Student-athletes in the secondary school setting interact with a wide range of adults who affect their daily activities. When a student is also an athlete with a concussion, it's important for all those adults to come together and make coordinated decisions in order to obtain the best results for that youth, both academically and athletically.

In high schools across the nation, millions of boys and girls are filling the roles of both student and athlete. Health care professionals are learning more about how to recognize and manage the physical demands and restrictions associated with concussions. However, when the athlete returns to the role of student, close scrutiny, care and management does not always accompany him or her.

Academic accommodations need to become part of the overall management plan for student-athletes in order to ensure their health as well as to promote educational growth.

## effects: not limited to field of play

Concussion is the most common brain injury in sports. A concussion may be defined as a mild traumatic brain injury induced by mechanical forces that immediately disrupt the normal functioning of the brain. The Centers for Disease Control and Prevention estimates each year there are 1.4 million traumatic brain injuries resulting in death, hospitalization or emergency care in the United States.

Research conducted at the University of Pittsburgh has demonstrated that a history of concussion can cause long-term memory loss and other problems. According to Micky Collins, PhD, a UPMC sports concussion clinician and researcher, young athletes are especially at risk.

"The study indicated for the first time in the high school athletic population that prior concussions may indeed lower the threshold for subsequent concussion injuries and increase symptom severity in even seemingly mild subsequent concussions," Collins reported in *Archives of Clinical Neuropsychology*.

UPMC researchers found that athletes with three or more concussions were nine times more likely to suffer more severe concussion symptoms (e.g., loss of consciousness and memory) than players with no prior history of concussion.<sup>1</sup>

The benefits scholastic athletes derive from athletic participation are wide and deep. Athletes are motivated, dedicated and goal orientated as sport participants. Often, these same characteristics carry over into their academic lives. When an athlete suffers a concussion and his/her activity is restricted during recovery, the traits that drive success can lead to frustration, denial or depression, and often can impact his/her personality, social interaction and scholastic performance.

It is important to remember that although the majority of concussions are relatively short-lived and produce no lingering effects, some concussions result in long-term, even devastating, disabilities. Every concussion

is a brain injury, and injuries need evaluation, adaptations in routine and time to heal. This is especially true in adolescents, whose brain tissue has increased vulnerability when compared to that of an adult.<sup>2</sup>

The need for a concussed athlete to have physical rest has been known for years. A necessary adjunct to the physical curtailment or alteration of intensity is that of cognitive rest.<sup>3</sup> Student-athletes must be evaluated and monitored in their schoolwork as well as their physical recovery. Educators are in a very advantageous position to notice changes that can lead to early intervention. Teachers are often the first to notice subtle changes in the student's ability to concentrate, remember new information and interact with classmates.

Tests taken while the student still has symptoms of a concussion may affect academic achievement levels. For example, a student who has headaches may have trouble concentrating in class. Brain injury-related fatigue during and after school may make it harder for the student to complete assignments or pay attention in class. Problems with short-term memory can make learning new information difficult in classes such as history, science and math, which require factual recall. Academic as well as physical stress has the potential to prolong recovery.

If the student's grade point average drops below minimum school or state standards, the student may become ineligible for athletic participation the next season. If the symptoms persist from the concussion while taking end-of-the-year exams or college entrance exams, resulting low scores may be devastating.

There are currently two major procedures by which schools may meet specific needs of those students with either short-term or long-term learning disabilities: either the construction of a 504 Plan or an Individualized Education Program (IEP).

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## what's a 504 plan?

A 504 Plan is written when a student has a disability that affects performance in any manner. Tyler and Wilkerson (2002) wrote a concise and informative brochure entitled "Section 504 Plan Checklist" in which they state, "Section 504 is a civil rights act. It protects the civil and constitutional rights of persons with disabilities. Section 504 of the Rehabilitation Act of 1973 states that schools receiving federal financial assistance may not discriminate against individuals with disabilities."

They go on to explain that "a person may be considered disabled as defined by Section 504, if the individual:

- "Has a mental....impairment that substantially limits one or more major life activities (such as)....learning;
- "Has a record of such an impairment;
- "Is regarded as having such impairment."

Section 504 is a federal law, so once a student is deemed suited for a 504 Plan, the school must comply with and apply all aspects of the plan. When school officials create a 504 Plan, there must be input from a variety of professionals such as physicians, school nurse, guidance personnel, teachers and administration. In addition, the student-athlete's parents must agree to the implementation of the 504 Plan.

The creation of a 504 Plan can be tedious, time consuming and is often excessive given the length of the majority of concussions. In the event a student-athlete suffers from Post Concussive Syndrome, which can produce life-altering complications and may persist for an extended period of time, the school will need to implement a 504 Plan to assist the student.

## typical accommodations in a 504

The 504 Plan is a tool for staff and parents to identify challenges and describe accommodations that will be provided in order assist the student accomplish identified behavioral and academic goals.

These accommodations may include changes in the environment, curriculum, methodology of teaching, organization, behavior and presentational strategies.

The accommodations may be included in a school's plan for concussed athletes even in the absence of a formalized 504 Plan. Sample accommodations listed in the Tyler and Wilkerson brochure include:

### Processing Accommodations

- [ ] Increased time to complete assignments and tests
- [ ] Break down complex directions into steps
- [ ] Decreased length of assignments

### Memory Deficits Accommodations

- [ ] Written as well as verbal instructions
- [ ] Posted schedule and directions
- [ ] Frequent review of information

### Attention Accommodations

- [ ] Visual prompts
- [ ] Frequent breaks
- [ ] Preferential seating

### Organizational Skills Accommodations

- [ ] Study guide and/or timeline
- [ ] Provision of color coded materials
- [ ] Daily calendar for assignments and tasks

## 504 alternative: iep

An alternative to a 504 Plan is an Individualized Education Program.

Granting a child a 504 Plan may be less involved than referring him/her to a child study team to be evaluated, classified, possibly placed in non-general education classes and provided with an IEP.

An IEP is intended for students who are classified and/or deemed to need special education instruction.

## creating accommodations

The idea of providing school faculty with a list of accommodations that may be utilized once the student has been identified as having a concussion is perhaps the most productive and easily accomplished alternative to the more formal 504 Plan and IEP Program.

Since many teenagers do not always communicate readily with their parents and they may be unaware of the signs and symptoms of a concussion, teachers may be the first to notice a change in the student's personality, work attitude or simply wonder what is wrong with the student.

## frequently observed signs of concussion

Everyone associated with the concussed student-athlete must be aware of signs and symptoms indicating a possible concussion. The student-athlete's friends, parents and coaches should be familiar with the signs and symptoms. So should the student's teachers.

Teachers typically may be the first to notice changes in classroom behaviors, such as:<sup>5</sup>

- Poor attention and concentration;
- Irritability and low frustration tolerance;
- Differences in following directions or answering questions;
- Reduced short-term memory recall;
- Delayed processing;
- Easily distracted;
- Inability to follow through with routine assignments;
- Disproportional reaction to situations;
- Repeating themselves;
- Sensitivity to light and/or noise.

Consider the following scenario:

John is usually a good student who is typically interactive and engaged during class. For the last three days since his team lost the big game, he has been acting lethargic and withdrawn. When questioned, John states he has a headache and is very tired.

## what to do?

Traditionally, a teacher may have reprimanded John or even called home to see if there is something going on outside of school. Use of an organizational system similar the following may prove to be more effective in assisting John personally and academically rather than just assuming he is "a typical teenager."

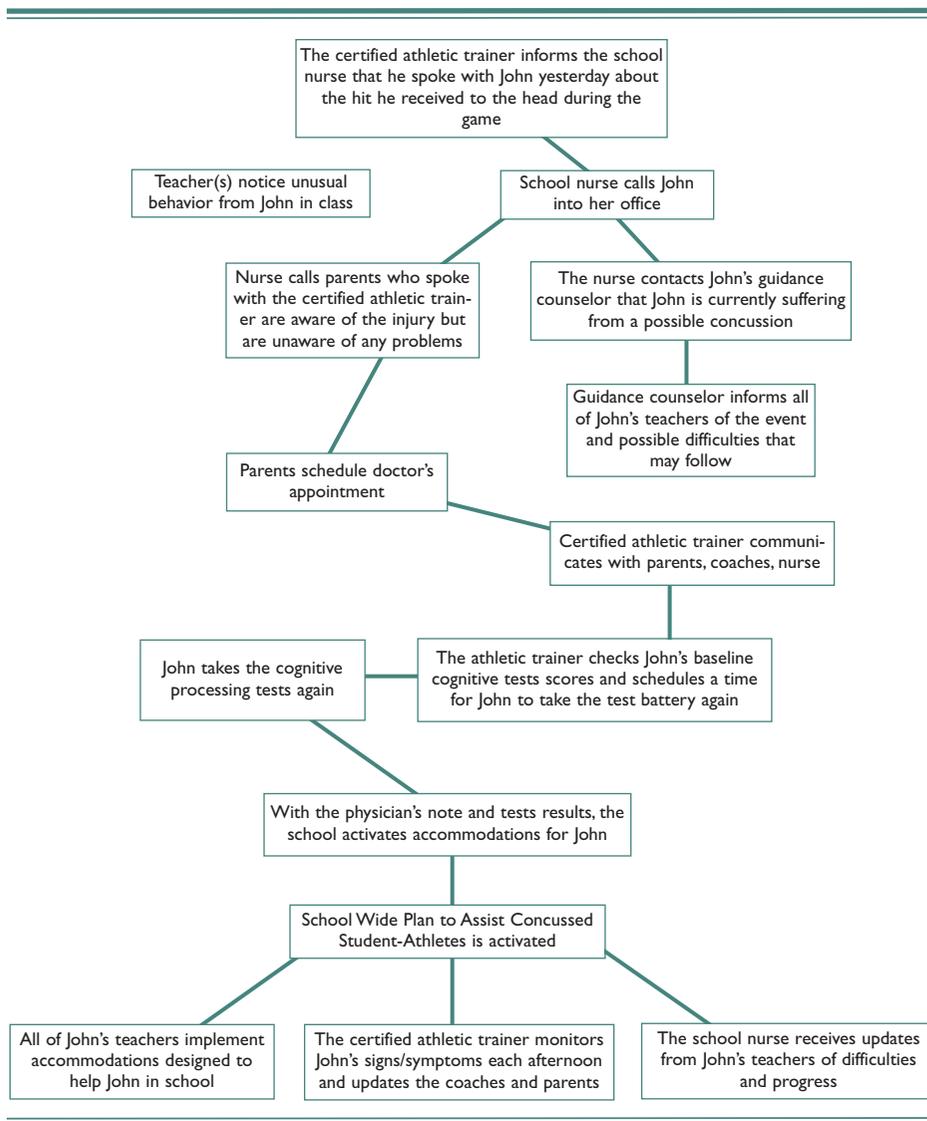
A more advantageous system is shown in the flowchart on page 34.

A quick review of this flowchart shows several immediate organizational and administrative advantages:

1. In this scenario, the certified athletic trainer initiates the process by bringing the athletic injury to the school nurse's attention.
2. The nurse speaks with both the student and the certified athletic trainer. Teachers may begin to notice behavioral, academic or social changes in the concussed athlete.
3. The certified athletic trainer informs the school nurse that John exhibited signs of a concussion in a game two days prior and that he spoke with John's parents at the game and has been seeing John after school each day. While the parents are aware of the situation, John reassured them he was fine.
4. After speaking to the school nurse, the certified athletic trainer speaks to John's



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mother and encourages her to schedule a doctor's appointment. After the initial 48 hours, the cognitive test is re-administered to John, and that score is compared with his baseline score. The certified athletic trainer shares this information with the parents, nurse, coach and examining physician.

5. The school nurse alerts all of John's teachers (some schools may utilize the guidance department for this notification) as to the situation and the anticipated length of recovery, according to the physician.
6. The school has previously adopted short-term accommodations to assist concussed student-athletes through this difficult time.

7. All of John's teachers possess a copy of the school-wide plan to assist concussed scholastic student-athletes, and they activate the portions of the plan that meet John's needs in their class.

The principles of sound and consistent monitoring are evident in this plan. The process goes from the athletic trainer, to the school nurse, to guidance counselors/teachers, with ongoing contact with parents and physicians.

The cycle of involvement may start in other places; for example, it may be the parent who calls the athletic trainer, coach or school nurse. It may be the athletic trainer who contacts the school nurse initially.

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Regardless of the starting point, the plan touches base with all necessary personnel and includes them throughout the entire process. The involvement of school nurse and athletic trainer will ensure monitoring of John's health while involvement by teachers and guidance will ensure monitoring of John's academic progress.

The athletic trainer should communicate with John's coach and parents often. This will ensure that the parents are aware of the entire process even if John did not share any information with them at the onset of symptoms.

Thankfully, most concussions do not produce long-term effects. However, even in the short-term, concussions can cause anxiety for the student and parent(s) or can result in an event that could have social and academic consequences (such as failing a mid-term exam).

Sports medicine professionals have worked toward recognizing and treating concussed athletes for many years and now must enlist their academic colleagues to join the team as well.

Concussed student-athletes fall between the classified or long-term disabled students and the normal, non-affected group. Their short-term, yet nevertheless, disabling condition needs to be monitored by caregivers and schools. Involvement by physicians and neuropsychologists cannot be overemphasized, especially if they are skilled in neurocognitive testing and interpreting.

### sample accommodations

The following are sample accommodations that a school might utilize to assist concussed student-athletes. Different schools as well as different classes within the same school will alter this list to best suit the school's overall administration philosophy and specific class needs.

Each teacher makes alterations as progress and healing occurs; in addition, each classroom may use different aspects at different times.

#### Teachers are prepared to help the student:

- Pay attention and concentrate;
- Plan ahead and work to achieve good organization;
- Verbalize, repeat and recall recent information;
- Manage time effectively.

#### Teaching strategies to consider include:

- One-on-one instruction;
- Extra class time;

- If necessary, consider an abbreviated day;
- Extended time to complete assignments;
- Extended time to take tests;
- Allow time to visit school nurse for treatment of headaches as needed;
- After-class time to reinforce and clarify;
- Rest breaks during the day as needed;
- Classroom buddy system;
- Provide written instructions for homework;
- Fax homework assignments to the parents;
- Utilize small group instruction;
- Repeat and present new information slowly;
- Take the time to show the entire class what good homework for this assignment would look like;
- Consider allowing use of a tape recorder;
- Ensure that seating avoids outside distractions;
- Be certain to monitor and share with nurse, guidance personnel and parents progress and difficulties;
- Utilize guidance personnel to share progress with all of the student's teachers;
- Communicate with parents about in-school progress and/or difficulties as well the quality of homework brought into class.

## summary

Teachers should become familiar with recognizing signs and symptoms of concussion. Professionals in academic arenas are encouraged to become partners in the care provided to student-athletes suffering from concussion.

Accommodations made for the academic portion of a STUDENT-athlete's life are just as important as the adjustments made for the physical portion of the student-ATHLETE'S participation.

Everyone involved with the student, both academically and athletically, has a role to fulfill. Teachers are classroom "coaches" when it comes to developing an appropriate game plan to ensure success for the student. School nurses and guidance personnel are key support positions who monitor the concussed student's success. Parents, certified athletic trainers and coaches are critical when it

comes to monitoring the athlete's health and attitude during the healing process.

New technology, better recognition skills and computer software programs to determine both pre- and post- neurocognitive skills have advanced the care given to athletes. Only through a comprehensive program that recognizes both the academic and athletic portions of the student's scholastic experience can total health care be accomplished.

## resources

1. Iverson G, Gaetz M, Collins MW, Lovell MR. Cumulative effects of concussion in amateur athletes. *Archives of Clinical Neuropsychology*. 2002;17(8):770
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3. Majurske C, Minkiak J, Collins M. et al. Data under review
4. Tyler J, Wilkerson L. Section 504 Plan Checklist for a student with a brain injury. Wake Forest, NC. Lash and Associates Publishing/Training.Inc.
5. Hossler P, Savage R. Getting A-Head of Concussions- educating the student-athlete's neighborhood. Wake Forest, NC. Lash and Associates Publishing/ Training.Inc. 2006.

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## What is NATA?

The National Athletic Trainers' Association (NATA) is the professional membership group for certified athletic trainers and others who support the athletic training profession. Our mission is to enhance the quality of health care provided by certified athletic trainers and to advance the athletic training profession. Founded in 1950, the NATA has grown to 30,000+ members worldwide.

## What's an AT?

Certified athletic trainers – ATs – are health care professionals who specialize in preventing, recognizing, managing and rehabilitating injuries that result from physical activity. As part of a complete health care team, the certified athletic trainer works under the direction of a licensed physician and in cooperation with other health care professionals, athletics administrators, coaches and parents.

Students who want to become certified athletic trainers must earn a degree from an accredited athletic training curriculum, with coursework and labwork in injury/illness prevention, first aid and emergency care, assessment of injury/illness, human anatomy and physiology, therapeutic modalities, nutrition, etc. Classroom learning is enhanced with clinical education experiences. More than 70 percent of certified athletic trainers hold at least a master's degree.

**ATHLETIC TRAINING IS NOT THE SAME PROFESSION AS PERSONAL TRAINING.**

**And certified athletic trainers work with more than athletes – they can be found just about anywhere that people are physically active.**

To become certified athletic trainers, students must pass a comprehensive test administered by the Board of Certification. Once certified, they must meet ongoing continuing education requirements in order to remain certified.

**Find out more at  
[www.nata.org](http://www.nata.org).**

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