



Return to Learn: Supporting Students Returning to the Classroom Post-Concussion

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Return-to-Learn after Concussion

- **What is a concussion ?**
- **What are the school-related problems that students experience after concussion ?**
- **How can we help students who are having school-related difficulties after concussion ?**

What is a concussion?

- Mild traumatic brain injury
- A disruption in normal brain function due to a blow or jolt to the head
- CT or MRI is almost always normal
- Invisible injury





Epidemiology of Concussion

- **1.6 to 3.8 million concussions each year in the United States**
- **Falls, motor-vehicle accidents, and assaults are the most common causes**
- **20% are sports-related (with a higher percentage among adolescents)**
- **Approximately 10% of sports concussions involve loss of consciousness**



Mechanisms of Injury

- **A complex physiological process induced by traumatic biomechanical forces**
 - **sudden chemical changes**
 - **traumatic axonal injury**
 - **altered cerebral blood flow**



Recovery from Concussion

- Full recovery in 7-10 days. . . *in most cases*
- About 85% to 95% recover in 3 months
- When symptoms persist, non-injury factors appear to play an increasingly significant role over time

a '*miserable minority*' experiences
complicated recovery

Post-concussion syndrome

Risk factors for complicated recovery

- Re-injury before complete recovery
- Over-exertion, especially early after injury
- Significant stress
 - Unable to participate in sports or exercise
 - Medical uncertainty
 - Academic difficulties
- Prior condition
 - TBI or migraine
 - Anxiety
 - ADHD
- Concurrent condition
 - Neck injury
 - Psychological trauma





Principles of Concussion Management

- **Avoid re-injury** until recovered
- **Avoid over-exertion** during recovery
- **Early education and reassurance improves outcome**
- **Return to activity should follow a medically supervised process**



Return-to-Learn

- Concussion can cause academic problems for days, weeks, or months
- Physical and mental over-exertion can aggravate symptoms and complicate recovery
- Academic stress and failure can increase risk of depression and anxiety, which in turn can hamper recovery



Return-to-Learn

- **Return-to-Learn is just as important as Return-to-Play**
- **Academic supports and accommodations can aid recovery**
- **School staff may have little understanding of concussion-related academic problems and how to help**



Return-to-Learn

- **Growing body of research showing cognitive, EEG, fMRI, DTI, and blood-flow abnormalities after concussion**
- **Growing awareness of academic problems after concussion, but still a significant lack of research in this area**
- **Current recommendations are based primarily on clinical experience**



Concussion in the Classroom

- **Striking a balance . . .**
 - **Medical need for rest and reduced exertion or stimulation**
 - **Academic need to maintain progress and avoid falling too far behind**

Parents, school staff and medical professionals need to work together !



Concussion in the Classroom

- **In most cases . . .**
 - **student may miss only a day or two of school**
 - **No specialized treatment needed**
 - **Avoiding re-injury or overexertion until recovered is the main concern**



Concussion in the Classroom

- **In complicated cases . . .**
 - **student may be unable to tolerate normal work-load for weeks or months**
 - **Increased physical and cognitive rest is needed**
 - **gradual return to activity under medical supervision**
 - **multidisciplinary treatment in a specialized concussion program**

Prague 2004 Guidelines

The concept of '**cognitive rest**' was introduced with special reference to a child's need to limit exertion with activities of daily living and to *limit scholastic activities while still symptomatic*



Common Physical Symptoms

- Headache
- Nausea
- Fatigue and lack of energy
- Clumsiness and poor balance
- Dizziness and lightheadedness
- Sleep problems



Neck injury often accompanies head injury

Vision Problems

- Blurred or double vision
- Bothered by bright or fluorescent light
- Eyes tire more easily
- Trouble reading (e.g., words move on the page, skipping words or lines)



Standard eye exam usually shows normal ocular health and acuity

Common Emotional Symptoms

- **Irritability**
- **Moodiness**
- **Easily overwhelmed**
- **Personality change**
- **Lack of motivation**
- **Emotional outbursts**



Common Cognitive Symptoms

- Feeling 'dazed' or 'foggy' or 'fuzzy'
- Easily confused
- Slowed processing
- Easily distracted
- Memory problems
- Trouble organizing
- *Poor mental stamina*



Exertion effects

- **Symptoms can be worsened by . . .**
 - ✓ **mental effort**
 - ✓ **environmental stimulation**
 - ✓ **emotional stress**
 - ✓ **physical activity**





Concussion in the Classroom

- **Tires easily in class and over the course of the day**
- **Bothered by noise, light, and commotion (hallways, cafeteria)**
- **Trouble doing more than one thing at a time (e.g., listening to the teacher and taking notes)**
- **Easily overloaded and 'shuts down'**



Concussion in the Classroom

- **Takes longer and more effort to accomplish the same work**
- **Concentration aggravates symptoms, especially headache**
- **Clumsy in hallways or stairwells**
- **Frequent visits to the nurse's office**
- **Late or incomplete homework**



Invisible Injury

- Student looks normal and *sometimes* feels normal
- Standard medical and neurocognitive testing may not show significant impairment
- Expectation from self and others to 'get over it' and 'get back in the game'

Secondary Problems

- **Depression or anxiety can emerge (or increase) due to . . .**
 - **Medical distress and uncertainty**
 - **Inability to participate in sports or other usual activities**
 - **Academic stress**
 - **Social isolation**



Guidelines for Return to School after Concussion

- Out of school at first if necessary, and then gradual re-entry as tolerated
- Avoid re-injury in sports, gym class and crowded hallways or stairwells
- Provide academic accommodations
- Regular communication





Academic Accommodations

- **Rest breaks during school in a quiet location (not always the nurse's office)**
- **Reduced course and work load**
 - If needed, drop unnecessary classes
 - Focus on essential material
 - Decrease homework
- **Avoid over-stimulation, (e.g., cafeteria or noisy hallways)**

Academic Accommodations

- **Extra time and a quiet location for tests**
- **Provide student with class notes or allow student to audiotape classes**
- **Allow student to wear sunglasses or a baseball cap to help with light sensitivity**
- **Preferential seating**





Academic Accommodations

- **Test formats that minimize memory demands**
- **Large-print books or books on tape**
- **Extra help outside regular class-time**
- **Breaking information and assignments down into manageable chunks**
- **Assistance with organizing and prioritizing work and assignments**

P.E. Accommodations

- **Avoid re-injury**
- **Avoid physical and mental over-exertion**
- **Avoid over-stimulation (noise and light)**
- **Minimize exertion at first, then increase activity gradually, as tolerated**
- **In complicated cases, some physical activity may promote recovery**
- **Don't substitute mental activity for physical activity !**

Physical education must be adapted to the physical needs of the student



Academic Accommodations

- **Home tutoring, 504 plan, or IEP**
- **Wide variation in how schools respond to requests for accommodations**
- **Resistance may be due to . . .**
 - **Lack of knowledge**
 - **Concern that student is faking**
 - **Grades are not that bad**
 - **Poor communication within school or between school and student/parents**



Neuropsychological Testing

- **Objective assessment of cognitive and emotional variables**
- **Test results can assist in return-to-play decisions**
- **Test results can also assist in return-to-learn decisions**



Recommendations for schools

- **Form a concussion team that can be a resource to families and staff**
 - **Athletic administrator and coach**
 - **School physician, nurse and ATC**
 - **Teacher and guidance counselor**
- **Implement an education program for sports, medical, and academic staff**
- **Develop and implement RTP and RTL policies**



Thanks!

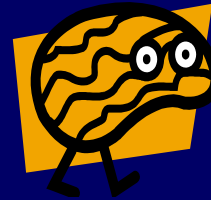
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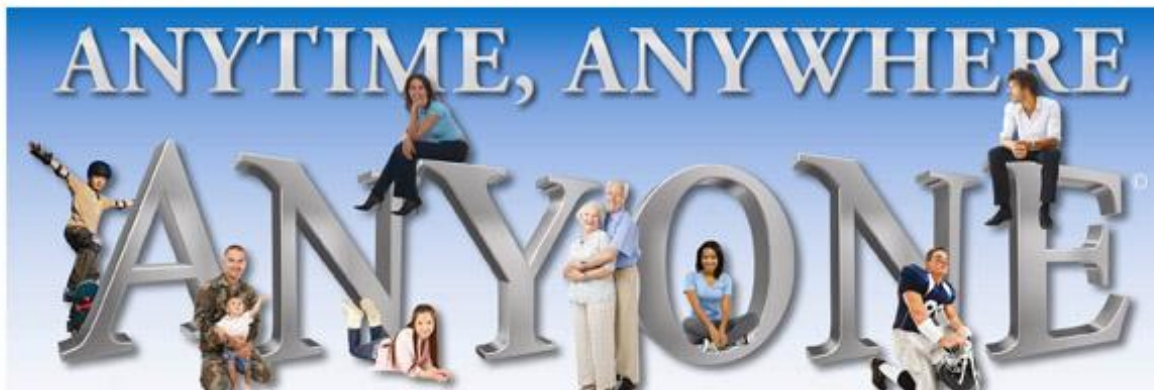
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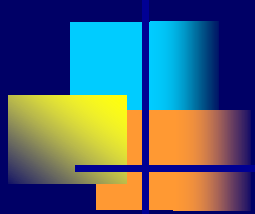


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