

Academic and Psychological Issues in Pediatric Concussion

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Disclosures

- Dr. Rieger is a consultant to *Quadrant Biosciences*
- *Quadrant Biosciences* is collaborating with Upstate Medical University on clinical trials



Objectives

- Identify common *academic problems* after concussion and strategies to facilitate a successful return to school
- Identify common *psychological issues* associated with concussion and strategies to manage these



Concussion in the classroom

- Concussion causes physical, cognitive, and emotional problems that interfere with school
- Adolescents can take up to 4 weeks to recover, and some may have symptoms for months
- Unlike return to play, most students will return to school before symptoms resolve
- Cognitive *performance* will often improve more quickly than cognitive *stamina*
- Invisible injury

Academic effects

Concussion is more likely than other sports injuries to cause trouble with school work (Wasserman et al., 2016)

Significant association between duration of concussion symptoms and academic problems
(Grubenhoff et al., 2015, Baker et al., 2014, & Ransom et al., 2015)

Students with persistent concussion symptoms report higher academic stress than uninjured controls (Rieger et al., in preparation)

No evidence for measurable long-term academic effects (Light et al., 1998; Babikian et al., 2011 & Russell et al., 2016)

Exertion effects

Concussion symptoms can be worsened by . . .

- ✓ **mental effort**
- ✓ **environmental stimulation**
- ✓ **emotional stress**
- ✓ **physical activity**

. . . like at school



Summary and Agreement Statement of the 2nd International Conference on Concussion in Sport, Prague 2004

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The concept of **cognitive rest was
introduced with a recommendation
to *limit scholastic activities while still
symptomatic***



CLINICAL REPORT

Returning to Learning Following a Concussion

abstract

Following a concussion, it is common for children and adolescents to experience difficulties in the school setting. Cognitive difficulties, such as learning new tasks or remembering previously learned material, may pose challenges in the classroom. The school environment may also increase symptoms with exposure to bright lights and screens or noisy cafeterias and hallways. Unfortunately, because most children and adolescents look physically normal after a concussion, school officials often fail to recognize the need for academic or environmental adjustments.

FREE

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KEY WORDS

head injury, mild traumatic brain injury, pediatrics, return to school, academics, return to learn, cognitive deficits

ABBREVIATIONS

AT—certified athletic trainer
FERPA—Family Educational Rights and Privacy Act
HIPAA—Health Insurance Portability and Accountability Act
IEP—individualized education plan

American Academy of Pediatrics 2013

Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, October 2016

Consensus statement

Table 2 Graduated return-to-school strategy

Stage	Aim	Activity	Goal of each step
1	Daily activities at home that do not give the child symptoms	Typical activities of the child during the day as long as they do not increase symptoms (eg, reading, texting, screen time). Start with 5–15 min at a time and gradually build up	Gradual return to typical activities
2	School activities	Homework, reading or other cognitive activities outside of the classroom	Increase tolerance to cognitive work
3	Return to school part-time	Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day	Increase academic activities
4	Return to school full time	Gradually progress school activities until a full day can be tolerated	Return to full academic activities and catch up on missed work

Children and adolescents should not return to sport until they have successfully returned to school.

Concussion in the Classroom

Striking a balance . . .

- **Medical need for reduced exertion and stimulation**
- **Academic need to maintain progress and avoid falling too far behind**

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

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**
- **Decrease stress**
- **Monitor and adjust**



Berlin Graduated Return-to-School Strategy

- 1. Daily activities at home that do not give the child symptoms** *Start with 5-15 minutes of normal activity and gradually increase*
- 2. School activities** *Homework, reading or other cognitive activities outside of classroom*
- 3. Return to school part-time** *Gradual introduction of schoolwork - may need partial day or breaks to start*
- 4. Return to school full-time** *Gradually progress to a full day as tolerated*

Expert consensus but little research support

Sample Academic Accommodations

- **Rest Breaks/Check-Ins with school nurse (preferably scheduled in advance)**
- **Reduced work load**
 - **Focus on essential material**
 - **Decrease homework**
- **Avoid over-stimulation (e.g., cafeteria or noisy hallways)**
- **Extra time and a quiet location for tests**
- **Postpone testing**

Adjust accommodations as needed

P.E. Accommodations

- **Avoid re-injury**
- **Avoid physical and mental over-exertion**
- **Avoid over-stimulation (noise and light)**
- **Allow symptom-limited physical activity (per Berlin guidelines)**
- **Don't substitute mental activity for physical activity**



Best Practice in Schools

Schools are encouraged to have an SRC (concussion) policy that includes education on SRC prevention and management for teachers, staff, students and parents, and should offer appropriate academic accommodation and support to students recovering from SRC (*Berlin Consensus*)

Form a Concussion Team

Proactive approach



Psychological Factors

Concussed athletes may not cope as well after injury compared to those with other types of injuries (Kontos et al., 2013)

Concussion can increase symptoms of depression and anxiety (Kontos et al., 2012; Broshek et al., 2015)

Pre-injury somatization or mental health problems are risk factors for prolonged recovery (McCrory et al., 2016)

Post-injury stress, mood changes, changes in activity and misattribution can maintain symptoms (Reed et al., 2016; Broshek et al., 2015)

Psychological Factors

Adolescent concussion patients reported significantly worse PTSD symptoms at 12 and 24 months compared to an orthopedic injury (arm) control group

Greater levels of PTSD symptoms were associated with poorer school and physical functioning *(O'Connor et al 2012)*



Concussion Effects

- **Don't feel right**
- **Easily overwhelmed**
- **Falling behind at school**
- **Can't handle stress as well**
- **Can't exercise or socialize as usual**
- **No one seems to understand**
- **Pushing harder only makes it worse**



Treatment Considerations

- **Identify stressors**
 - Help students address them
 - Teach new coping strategies
- **Encourage and allow as much normal activity as symptoms permit**
- **Identify and treat (refer) emerging anxiety, depression or PTSD**
- **Consider alternate explanations for symptoms, especially if worsening**

Summary

- **Concussion can cause academic and emotional challenges**
- **Proper concussion management in youth will address both **return-to-learn** and **return-to-play****
- **Academic supports and accommodations are often needed during recovery from concussion**
- **Psychological factors and emotional distress can complicate recovery, and should be monitored/treated**