

The Role of School Personnel in Concussion Management

Carisa Raucci, PhD, ATC, CSCS (Athletic Trainer)

Patricia Beldotti, PsyD, CBIS (Neuropsychologist)

Tucson Concussion Center

Objectives

- ▶ Define a concussion
- ▶ Identify signs and symptoms of a concussion
- ▶ Identify how a concussion might affect a student's learning, performance, behavior, and psychological functioning
- ▶ Review factors that can promote optimal recovery
- ▶ Identify ways to help a student recovering from a concussion

Concussion

- ▶ Definition - “a type of traumatic brain injury (TBI) caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth”
- ▶ This sudden bouncing or twisting of the brain can cause stretching and damaging of the brain cells, creating chemical changes in the brain

Centers for Disease Control and Prevention http://www.cdc.gov/headsup/basics/concussion_what.html



Related Concerns

- ▶ Functional problem, not structural
- ▶ Sufficient healing time necessary
 - ▶ Second Impact Syndrome (SIS)
 - ▶ Chronic Traumatic Encephalopathy (CTE)
- ▶ Over 25 published grading scales and treatment protocols
- ▶ No 2 concussions are alike
- ▶ Up to 100% of kids discharged from hospital receive incorrect discharge instructions



Concussions

- ▶ Many different causes:
 - ▶ Sports
 - ▶ MVA
 - ▶ Falls
 - ▶ Assaults / Domestic violence
- ▶ Signs and symptoms vary and may not show up for days or weeks!!
 - ▶ Does NOT have to lose consciousness
 - ▶ Brain scans can be normal
- ▶ Middle-school girls soccer
 - ▶ Incidence 13%
 - ▶ Symptoms lasting ~ 9.4 days

Increased Risk

- ▶ Each concussion increases risk of future concussions
- ▶ Children & adolescents have increased risk of sustaining a concussion and can take longer to recover than adults
- ▶ Average “typical” recovery time
 - ▶ Adolescents (10-14 days)
 - ▶ Adults (7-10 days)
 - ▶ Up to 30% don't recover in the average time period
- ▶ Age
- ▶ Gender
- ▶ History of previous concussion, migraines, learning disabilities, ADHD, psychological issues

Common Signs and Symptoms

Physical

- Headache
- Visual problems
- Dizziness
- Noise and/or light sensitivity
- Nausea

Cognitive / Learning

- Attention problems
- Memory dysfunction
- Fogginess
- Fatigue
- Cognitive slowing

Neuropsychiatric / Behavioral

- More emotional
- Sadness, Depression
- Nervousness, Anxiety
- Irritability
- Reduced frustration tolerance
- Impulsivity

Sleep Disturbances

- Difficulty falling asleep
- Sleeping less than usual

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Post Concussion Syndrome

A history of TBI causing significant cerebral concussion; cognitive deficits in memory and/or attention; and presence of at least three of eight symptoms consisting of:

- Fatigue
- Sleep disturbance
- Headache
- Dizziness
- Irritability
- Affective disturbance
- Personality change
- Apathy

Predictors of a Prolonged Recovery

- ▶ Previous concussions & duration between concussions
- ▶ Psychiatric state (pre-injury) - anxiety, depression, stressors
- ▶ Learning disabilities, ADD/ADHD
- ▶ Acute dizziness - 6.3x more likely
- ▶ Female
- ▶ Younger
- ▶ Headache lasting more than 60 hours
- ▶ History of migraines
- ▶ Greater # of post-concussive symptoms
- ▶ Severity of neurocognitive weaknesses within first 3 days

Observation



Symptoms in the Classroom

- ▶ Mental fatigue
- ▶ Decreased concentration, attention, and working memory
- ▶ Difficulty with new learning and recall
- ▶ Reduced processing speed
- ▶ Difficulty with mental flexibility and multi-tasking; impulsivity
- ▶ Irritability, low frustration tolerance
- ▶ Reduced self-confidence, self-esteem, depression, anxiety
- ▶ Withdrawn, wanting to avoid social interactions
- ▶ Vision problems; Hypersensitivity to light and sound
- ▶ Increased symptoms with mental work (headaches, nausea, decreased focus, increased mental fatigue, etc.)

How Concussion Affects the Classroom

Composite scores	Age group (years)		P
	13-16 (mean, SD)	18-22 (mean, SD)	
Verbal memory	7.2 (5.6)	4.7 (4.6)	0.001*
Visual memory	7.1 (5.6)	4.7 (4.9)	0.002*
Reaction time	7.2 (5.8)	5.1 (5.2)	0.010*
Processing speed	6.8 (5.8)	5.3 (5.4)	0.063
Postconcussion scale	8.1 (6.8)	6.1 (5.4)	0.026*

Zuckerman, S.L., Lee, Y.M., Odom, M.J., Solomon, G.S., Forbes, J.A., & Sills, A.K. (2012). Recovery from sports-related concussion: Days to return to neurocognitive baseline in adolescents versus young adults, *Surg Neurol Int.*, 3, 130.

Evaluation

- ▶ History
- ▶ Neuropsychological & psychological symptoms
- ▶ Speech
- ▶ **Sleep**
- ▶ Physical - gait, balance, coordination, neck, pain
- ▶ Vestibular
- ▶ Vision / Ocular
- ▶ Exertional
- ▶ Symptom score
- ▶ Nutrition
- ▶ Neurological
- ▶ Brain imaging / Additional specialty assessments (as indicated)

The Concussion Puzzle



Physical Examination

Neurocognitive Testing



Eye Movement Assessment



Balance Testing

CONQUERING
CONCUSSIONS



CACTISTM
FOUNDATION
Informatics/Imaging/Genomics/Innovation

Treatment

- ▶ Rest
 - ▶ Physical
 - ▶ Activity/Exertion/Exercise
 - ▶ 5 days rest vs 1-2 days → 3 days longer recovery
 - ▶ Sleep (how long/how often)
 - ▶ Cognitive
 - ▶ School/work - goal: amount that is tolerable and doesn't ↑ symptoms
 - ▶ Homework
 - ▶ Screen time - font, brightness, duration
 - ▶ Multitasking
- ▶ Replacement activities that are less exerting for short periods of time
- ▶ Sleep patterns
- ▶ Nutrition
- ▶ NSAIDs (Advil, Ibuprofen, Aleve, etc)
- ▶ Tylenol
- ▶ Social interaction & support

Promoting Optimal Concussion Recovery

- ▶ Identifying and responding appropriately when a concussion occurs can help promote optimal recovery and reduce long-term problems
- ▶ Clinicians develop individualized guidelines for each person based on concussion symptoms, performance on concussion assessments, and history (recommendations are modified as recovery progresses)
- ▶ Balance between rest and cognitive / physical work
- ▶ Prevent over-stimulation
- ▶ Gradual increase in cognitive / physical activity as symptoms improve; Only increase activity if symptoms are not triggered or worsened
- ▶ Prevent activity that is high risk for re-injury during recovery period
- ▶ Mental or physical over-exertion, re-injury, or emotional stress may aggravate symptoms and prolong recovery

Return-to-School Concussion Protocol

(DeMatteo, Stazyk, Giglia, Mahoney, et. al., 2015)

▶ Stage 1: Brain Rest

- ▶ No school for at least 1 week (*others recommend less time, base duration on individual)
- ▶ No TV, videogames, texting, reading
- ▶ When symptom-free, move to stage 2
- ▶ If symptoms persist longer than 2 weeks, consider moving to stage 3 (discuss with dr)

▶ Stage 2: Getting Ready to Go Back

- ▶ Begin gentle activity as recommended
- ▶ 15 minutes of screen time / reading, twice per day
- ▶ Walking
- ▶ Reduce activity if symptoms worsen
- ▶ When symptom free, move to stage 3
- ▶ If symptoms persist longer than 2 weeks at this stage, consider moving to stage 3 (discuss with dr)

Return-to-School Concussion Protocol

(DeMatteo, Stazyk, Giglia, Mahoney, et. al., 2015)

- ▶ **Stage 3: Back to School / Modified Academics**
 - ▶ Start with shortened day (1 hour, half day, etc.).
 - ▶ Attend less stressful and less demanding classes
 - ▶ Modifications: No tests, no homework and then short HW, etc.
 - ▶ Environmental modifications (seating, noise, etc.)
 - ▶ Extra sleep at night; Quiet retreat place at school for breaks
 - ▶ Limit TV & screen time (15 min intervals, max 1 hr/day)
 - ▶ Emotional support as needed
 - ▶ This stage may last days or months, depending on recovery
 - ▶ Reduce if symptoms worsen; When symptom free, move to stage 4
 - ▶ If symptoms persist 4 weeks or longer, may consider formal plan

Return-to-School Concussion Protocol

(DeMatteo, Stazyk, Giglia, Mahoney, et. al., 2015)

▶ Stage 4: Nearly Normal Routines

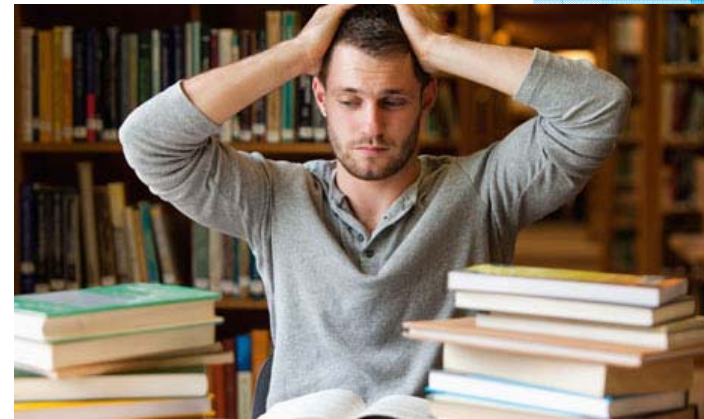
- ▶ Back to full days of school but can do less than 5 days per week if needed
- ▶ Maximum of 1 test per week (some recommend no tests yet)
- ▶ Complete as much homework as tolerated
- ▶ Emotional support as needed
- ▶ When symptom free, move to stage 5

▶ Stage 5: Full Activation

- ▶ Gradual return to normal routines, including attendance, homework, tests, and extracurricular activities
- ▶ Returning to normal routines is important part of recovery process

Concussion Support in the Classroom

- ▶ **Temporary symptoms** (several weeks or months)
 - ▶ Temporary accommodation, modifications, adjustments
 - ▶ Shortened school day
- ▶ **Long-term and/or more severe symptoms**
 - ▶ 504 Plan or IEP
 - ▶ Alternative Plans:
 - ▶ Homebound instruction
 - ▶ Home schooling



Concussion Support in the Classroom

- ▶ Adjustments to length of day and work load:
 - ▶ Shortened school day (start 1-3 hours, gradually increase as indicated)
 - ▶ Start with easier classes, gradually add in more challenging classes
 - ▶ Limit to priority school work & a period for extra help, etc.
- ▶ Modified Tasks:
 - ▶ Limit note-taking (multi-tasking); provide handouts, recorder, audiobooks
 - ▶ Limited reading
 - ▶ Combine verbal information with visual information
 - ▶ Shortened homework
 - ▶ Limited make-up work
 - ▶ Avoid tests (including standardized tests & psychoeducational evaluations)

Concussion Support in the Classroom

- ▶ Adjustments / Accommodations:
 - ▶ Untimed tasks or extended time for work and assignments
 - ▶ Break tasks down into smaller, more manageable tasks
 - ▶ Preferential seating & support for decreased attention
 - ▶ Scheduled breaks, trips to the nurse as needed; extra snack breaks
 - ▶ Dismiss before class to avoid crowds
 - ▶ Use of earplugs or sunglasses/hat if needed (light/sound sensitivity)
 - ▶ Alternatives for cafeteria, music, physical education classes, etc.
- ▶ Extra Support
 - ▶ One-on-one tutoring
 - ▶ Extra practice for new learning
 - ▶ Counseling & emotional support as needed

Optimizing Recovery: A Team Approach

- ▶ **Team approach is ideal for optimal recovery and support**
- ▶ Regular communication between home, school, health care team
- ▶ Case manager/coordinator (primary contact person at school, etc.)
- ▶ Class accommodations & supports as needed; Relieve anxiety about getting behind
- ▶ Promotion of self-esteem & support for coping with concussion & feeling “normal”
- ▶ Opportunities for social interaction; Extracurricular activities
- ▶ Goal setting and self-monitoring
- ▶ Consistent neurocognitive screening by trained clinician (ImPACT, CRI, CCAT, ANAM) and/or neuropsychological evaluation if/when indicated - provides guidance for any changes in recommendations or supports
- ▶ *Over-exertion, re-injury, and/or emotional stress may aggravate symptoms and prolong recovery (requires ongoing monitoring and modifications in plan as indicated)

Concussion Treatment Team

- ▶ Physician
- ▶ Neuro-optometrist
- ▶ Neuropsychologist
- ▶ Vestibular Therapist
- ▶ Vision Therapist
- ▶ Occupational Therapist
- ▶ Neurologist
- ▶ Psychiatrist
- ▶ Psychologist /Counselor
- ▶ Pain Management Team
- ▶ Family
- ▶ Teachers
- ▶ School Nurse
- ▶ School Administrator
- ▶ School Psychologist
- ▶ School Counselor
- ▶ Aides & Support Staff
- ▶ Speech Pathologist
- ▶ Athletic Trainer / Coaches

Concussion Resources

- ▶ **CDC Heads Up Concussion Guidelines, Resources, and Online Training**
 - ▶ Heads Up to Schools: Know Your Concussion ABCs; Returning to School After a Concussion: A Fact Sheet for School Professionals (PDF available for download)
- ▶ **Brain Injury Association of America (biausa.org)**
- ▶ **Brain Injury Alliance of Arizona (biaaz.org)**
- ▶ **Center for Brain Injury Training and Research (cbirt.org)**
- ▶ **Children's National Safe Concussion Outcome (childrensnational.org)**
- ▶ **Brain Steps Program (www.brainsteps.net, school intervention program in PA)**
- ▶ **BrainSTARS, Brain Injury: Strategies for Teams And Re-education for Students, Manual on Pediatric Brain Injury. For more information or to order copies, call 720.777.5470 or chris.moores@childrenscolorado.org. A short video on how to use the BrainSTARS manual is available at www.youtube.com/BrainSTARSprogram.**

Concussion Management at TCC

- Baseline testing
- Evaluations / Consultations
- Diagnosis
- Patient Education & Guidance
- Early Intervention
- Evidenced-Based Treatment/Rehab



Services We Provide at TCC

- ▶ Baseline testing
- ▶ Consultation / Specialized Evaluations
- ▶ Diagnosis of Traumatic Brain Injury (TBI)
- ▶ Individualized treatment of TBI
- ▶ Return to Learn/Play/Work/Community programs
- ▶ Follow-up appointments / Recovery monitoring
- ▶ Communication with other health providers & school personnel as permitted by patient / parent
- ▶ Sports physicals
- ▶ Professional & community TBI education





**TUCSON
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CENTER™**

Website: tucsonconcussioncenter.com

520-620-9200 or 844-TBI-MTBI

craucci@tucsonconcussioncenter.com

pbeldotti@tucsonconcussioncenter.com