Acute Management of Concussion
R*E*A*P
Return to Learn

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www.rockymountainhospitalforchildren.com

Colorado Legislation
SB 40: Jake Snakenberg You Concussion Act
Signed into law on March 29, 2011
Into effect January 2012

- Education to all coaches of athletes 11 to 18 years in – private, public, club and rec., for middle and high school students
- Remove from play if concussion “suspected”
- Return to play with medical clearance – MD, DO, PA, NP and Doc level Psychologist with Neuropsych and/or concussion training

http://www.visualizing.org/visualizations/concussion-laws-state
What do we know?

This is a very treatable condition, with very good odds...

But it requires time and management

Recovery From Concussion

Collins et al., 2006
Neurosurgery

Injury rate per 100,000 injury exposures in high school athletics:

- Football: 52
- Boy's Ice Hockey: 43
- Girls Lacrosse: 39
- Girls Soccer: 35
- Boys Lacrosse: 32
- Boys Wrestling: 22
- Girls Basketball: 20
- Girls Field Hockey: 18
- Boys Soccer: 17
- Girls Softball: 15
- Boys Basketball: 9

Source: NHSHigh School RIO 2008-09
RTL Legislation
The Network for Public Health Law

- Hawaii
- Maryland
- Massachusetts
- Nebraska
- New York
- Vermont
- Virginia
80 to 90% odds
- 40% of concussions are resolved in 1 week
- 70% of concussions are resolved in 2 weeks
- 80% of concussions are resolved in 3 weeks
- 95% of concussions are resolved in 5 weeks

90% within 21 days (Guskiewicz et al., 2003)

80 to 90% odds in 1 to 4 weeks!
REMOVE/REDUCE

REMOVE from all physical activities!
• No organized sports
• No recreational play
• No PE, dance class
• No physical play at recess

REDUCE home stimulation!
• No texting
• No TV
• No computer screens
• No video games

REDUCE school demands!
• Mental Fatigue
• Slowed Processing Speed
• Difficulty converting memory into New Learning

TIME (usually between 7 to 21 days)

FAMILY TEAM
- Limit texting
- TV, video games, computer time
- Homework, chores
- Keep home from extra curricular activities (ie. dance, games, the mall)
- Decrease stimulation
- Increase home stimulation; keep sx's at sub-threshold level
- REST!

SCHOOL ACADEMIC TEAM
- Keep return of academic symptomatic
- Return to school when sx's are still present but tolerable
- Eliminate work
- Reduce work
- Adjust work
- Increase cognitive demands
- Keep sx's at sub-threshold level

PACE MENTAL DEMANDS

Typical Recovery
- Gradual increase in home stimulation and academic demands
- Do not wait until sx's are gone
- Instead, keep sx's at a sub-threshold level

Every team has an essential part to play at certain stages of the recovery
EVERY Member of Every Team is Important!

Who will be on the School Team — Physical (ST-P)?
Who at the school will watch, monitor and track the physical symptoms of the concussion? Who is the ST-P Point Person?

Who will be on the Family Team (FT)?
Who from the family will watch, monitor and track the emotional and sleep/energy symptoms of the concussion and how will the Family Team communicate with the School and Medical Teams?

Who will be on the School Team — Academic (ST-A)?
Who at the school will watch, monitor and track the academic and emotional effects of the concussion? Who is the ST-A Point Person?

Who will be on the Medical Team (MT)?
How will the MT get information from all of the other teams and who with the MT will be responsible for coordinating data and updates from the other teams?

A “Multi-Disciplinary Team”
Team members who provide multiple perspectives AND Team members who provide multiple sources of data

Cut Back

- Gradual increase in home stimulation and academic demands
- Do not wait until sx's are gone
- Instead, keep sx's at a sub-threshold level
**PHYSICAL**  
How a Person Feels Physically

- Headache/Pain
- Blurred vision
- Dizziness
- Your balance
- Ringing in ears
- Seeing “stars”/Glowing eyes

**COGNITIVE**  
How a Person Thinks

- Nausea
- Vomiting
- Numbness/Tingling
- Sensitivity to light
- Sensitivity to noise
- Disorientation
- Neck Pain

**EMOTIONAL**  
How a Person Feels Emotionally

- Inappropriate emotions
- Irritability
- Sadness
- Nervousness/anxiety
- Lack of motivation
- Feeling more “emotional”

**SLEEP/ENERGY**  
How a Person Experiences Their Morning Land and/or Sleep Patterns

- Fatigue
- Drowsiness
- Excessive sleep
- Sleeping less than usual
- Trouble falling asleep

**IMPORTANT!**

**Adjust/Accommodate Accordingly**

**Family Team:** Cut back on electronics/stimulation at home... begin to add back in...

**School Academic Team:** Cut back on cognitive demands at school... begin to add back in...

Test out recovery in these 2 safe ways first.

**How do I get back to my sport?**

**N.B.** Some feel like they’re contracted from their performance.

- As a team, reach out for support.
- Always consult with an athlete’s healthcare provider.
- Prioritize best practices:
  - Sport-specific training
  - Proper nutrition
  - Adequate sleep
  - Mental health
- Remember: Recovery is not a one-size-fits-all approach. Each athlete is unique and requires different strategies.

**SPORTS PERFORMANCE CENTER**

**Get Started**

- **Sports Performance Center**
  - Performance-enhancement programs
  - Nutrition and hydration
  - Mental health support
- **Emergencies**
  - Life-threatening medical emergencies
  - Sports-related injuries
- **Resources**
  - Education and prevention
  - Early intervention
- **Contact Information**
  - Sports Performance Center
  - 555-5555
  - info@sportsperformance.com

**For More Information**

- Visit our website at sportsperformance.com
- Follow us on social media @sportsperformance
A Graduated Return-to-Play (RTP) Recommended by The 2012 Zurich Consensus Statement on Concussion in Sport*

<table>
<thead>
<tr>
<th>STAGE</th>
<th>ACTIVITY</th>
<th>OBJECTIVE OF STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Light aerobic exercise</td>
<td>Symptom limited physical and cognitive rest. When 100% symptom free for 24 hours proceed to Stage 2. (Recommend longer symptom-free periods at each stage for younger students/athletes)</td>
</tr>
<tr>
<td>2</td>
<td>Sport-specific exercise</td>
<td>Increase heart rate</td>
</tr>
<tr>
<td>3</td>
<td>Non-contact training drills</td>
<td>Add movement</td>
</tr>
<tr>
<td>4</td>
<td>Full-contact practice</td>
<td>Exercise, coordination and cognitive load</td>
</tr>
</tbody>
</table>

The healthcare professional should give the responsibility of the graduated RTP steps over only to a trained professional such as an ATC, PT or should teach the parents. A coach, school nurse or PE teacher does NOT need to be responsible for taking concussed student/athletes through these steps.

Research Note: Earlier introduction of physical activity is being researched and may become best practice. However, at this time, any early introduction of physical exertion should only be conducted in a supervised and safe environment by trained professionals.

FAMILY TEAM
- Is the student/athlete 100% back to pre-concussion functioning?

SCHOOL PHYSICAL TEAM
- Often the ATC at the school takes the athlete through the RTP steps. If there is no ATC available, the MEDICAL TEAM should teach the FAMILY TEAM to administer and supervise the RTP steps.

SCHOOL EDUCATORS
- Is the student/athlete 100% back to pre-concussion academic functioning?

DATA
- Every student-athlete is a student first and an athlete second.

SCHOOL PHYSICAL ATC
- Every student-athlete is a student first and an athlete second.

FAMILY
- 100% back to pre-concussion functioning?

SCHOOL EDUCATORS
- 100% back to pre-concussion academic functioning?

Day 1/Week 1
- Injury
- Data

Week 2
- Family, Educator and ATC/Coach role:
  - manage symptoms
  - promote recovery
- provide feedback to MD to help determine safe return to physical activity.

Week 3
- Medical clearance, family, educator and ATC/Coach decide if student is ready to return to play.

No RTP until RTL.
AFTER YOUR CHILD HAS RECEIVED THE DIAGNOSIS OF CONCUSSION

Start Here

1-2 days rest followed by stepwise return to activity

Intervention Group: 5 days of "strict" rest

Control Group: 1-2 days rest followed by stepwise return to activity

Benefits of Strict Rest After Acute Concussion: A Randomized Controlled Trial
D. Thomas et al Pediatrics, February 2015

Return to school when sx’s are "tolerable, short-lived and amenable to rest or intervention" for 30 to 45 minutes; Usually 2 to 4 days; academics adjustments -504 may be reasonable after 4 weeks; academic accommodations -IEP should not be considered for months and until TBI is permanent, specialized instruction, programming, placement or modification of curriculum

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1. Get Back to School - Mental Fatigue/h/a

- Out of school if needed – but only for a limited time – (few days)
- Shortened day if needed – but only for a limited time – (few days)

- Rest breaks:
  - Eyes closed/head down 5 to 10 minutes per hour in classroom
  - 15 to 20 minute “strategic rest breaks” in clinic
  - Sunglasses or earphones to reduce stimuli

- Oculomotor concerns:
  - Eye strain, especially with computer or screen
  - Print notes
  - Large print
  - Audio books
  - Colored lenses/ corrective lenses

- Vestibular concerns:
  - Notes to boards
  - Print notes/teacher outlines/buddy notes
  - Quiet passing in hallways
  - Preferential seating
  - Emotional reactions (especially in younger students) are often signs of mental fatigue

2. Slowed Processing Speed

- Cut back on the amount of work.
- Go for quality, not quantity
- Go for comprehension, not memorization
- Reduce in-class and homework load
  - Reducing # of problems
  - “Auditing” lecture material
  - Oral as written output
  - Focus on mastery of material – not work output
- Eliminate NON-essential in-class and homework load
- If it is essential, consider:
  - Extra time on projects and tests
  - Adjust (some, not all) due dates. Do not carry over work if possible

It is NOT possible to keep up on or make-up all missed work!
Prioritize current learning instead of make-up work.
3. Difficulty Learning New Material

- Be thoughtful about your teaching. What is most important for the student to know at this time?
- Testing: mastery and grades
  - Was material learned? Physically and cognitively present?
  - Is material essential for end of level, next level and grading?
  - If not, eliminate
  - If yes, re-teach only what is essential, then assess mastery
  - Does it have to be a test?
- If a final is a must, no more than 1 final per day, with 1 day of rest between finals
- No carry over make-up work or tests into school vacations; we need that time for cognitive rest and healing
  - A small amount of “practice” work may be OK for reinforcement of skills

Front Load your interventions ... and then taper back

Most generous interventions upon return to school in Week 1

Begin to expect more from student at school and with homework into Week 2

Back almost to 100% in Week 3

May just be making up reasonable amt of make-up wk.

Work Output

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
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</thead>
<tbody>
<tr>
<td>Maximize academic adjustments</td>
<td>Reduce work</td>
<td>Begin to pull back adjustments</td>
</tr>
<tr>
<td>Remove work</td>
<td>Continue to remove and reduce essential work</td>
<td>Continue to pull back and reduce all work</td>
</tr>
<tr>
<td>Reduce work</td>
<td>Continue to reduce essential work</td>
<td>Continue to pull back and reduce all work</td>
</tr>
<tr>
<td>Give FREQUENT eye/brain breaks</td>
<td>Continue to reduce essential work</td>
<td>Continue to pull back and reduce all work</td>
</tr>
<tr>
<td>Allow breaks in clinic if needed</td>
<td>Continue in clinic if needed</td>
<td>Continue to pull back and reduce all work</td>
</tr>
<tr>
<td>Keep symptoms low and tolerable</td>
<td>Wean back visits to clinic</td>
<td>Continue to pull back and reduce all work</td>
</tr>
<tr>
<td>Go for just being in class, learning, very little output</td>
<td>Keep symptoms improving</td>
<td>Continue to pull back and reduce all work</td>
</tr>
<tr>
<td></td>
<td>Continue to prioritize comprehension and learning over output</td>
<td>Continue to pull back and reduce all work</td>
</tr>
<tr>
<td></td>
<td>Continue to prioritize current work over make-up work</td>
<td>Continue to pull back and reduce all work</td>
</tr>
<tr>
<td></td>
<td>Continue to assure that symptoms are resolving</td>
<td>Continue to pull back and reduce all work</td>
</tr>
</tbody>
</table>
"Gifts" of:
- work removal
- work reduction
- test exemption
- alternative assessments and grades

All require being present for instruction. Exposure to material (even if teacher requires little to no output) is MOST important!

Being physically present AT school (attendance) and being cognitively present FOR learning depends primarily on “symptom management”

- Eye/brain breaks, pacing throughout day
- Caution against using partial days and Homebound Instruction

www.get schooled on concussions.com

Get Schooled On Concussions
Return To Learn (RTL)

Issue #1 Mental Stigma
Issue #2 How to Have a Concussion Right Now
Issue #3 How to Have a 504 Plan: Part #1
Issue #4 How to Have a 504 Plan: Part #2
Issue #5 Return to School: Progression - Coming Soon
Issue #6 Elementary Versus High School
Issue #7 Data Curricular Activities
Issue #8 Complete Read
Issue #9 Recruitment: Parents
Issue #10 What Is a 504 Plan?
Issue #11 What to Do About Work
Issue #12 What to Do About Tests
Issue #13 What to Do About Missed Instruction
Issue #14 School Nurses
Issue #15 Sleep

We make concussions trainable in your classrooms
Providing a Continuum of Care for Concussion using Existing Educational Frameworks


From GetSchooledonConcussions.com and R*E*A*P Response to Intervention (RTI) as applied to Concussion (Response to Management RTM) McAvoy 2012

**Tier III: Special Education/IDEA**
- Permanent brain damage = Academic Modification of curriculum, specialized instruction or placement

**Tier II: Longer-term Plan due to prolonged effects of concussion. May be a 504 Plan = Academic Accommodations.**
- Still responsible for curriculum but will provide supports to environment, more targeted interventions and for a longer period of time

**Tier I: Typical recovery from concussion = Academic Adjustments**
- Universal interventions, applied in general education, fast, fluid, flexible, put in place immediately and lifted regularly as symptoms improve daily

**Concussions Outside the Box**
- 10 to 20% have a protracted recovery
- Underlying risk factors at play:
  - Not enough time for recovery or not enough rest and reduction
  - Pre-concussion h/a/s/migraines or family hx of migraines
  - Vestibular/oculomotor issues
  - Autonomic Dysfunction – faint, dizzy
- Adjustments/Accommodations at home and at school needed for a continued period of time.