Participation Issues following Concussion in Young Adults

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Session Objectives

- **1) Identify the common causes and symptoms of concussion among young adults**
- **2) Discuss the physical, cognitive, and emotional impacts of concussion that may impact performance in educational, vocational, and social activities of young adults**
- **3) Link "return to play" guidelines with classroom performance and needs of the young adult post-concussion**

Case Study

I presented documentation of my concussion to one of my professors Dr. #### for my IE##0 class. He said there is nothing he can do with the paperwork now since I already took the exam. I told him that the only reason I took the exam was because I was not able to see Dr. ##%%# until the day after the exam, and I did not have any documentation at the time, so like a good student I went to take the exam, but unfortunately I struggled to concentrate, and I did not have nearly enough time because I was distracted by the littlest things.

Case Study (Continued)

My concussion was sustained on 9/27/14, I have documentation of this, the midterm was on 10/2/14, but my first appointment was not until 10/3/14. On 10/3/14 was the first day I could have had documentation to present to a professor. I told my professor the following class that I was suffering from a concussion sustained 5 days prior and that I should not have taken the exam.

Case Study (Continued)

Today 10/9/14 I brought him documentation of this and he says there is nothing he can do for past exams. He says it is against rules and policies and it makes the playing field un-level for all students involved if he makes accommodations for me. He also stated that my documentation does not mean anything because I could have a family friend, or I could have faked the letter to cheat the system. I do not think he was implying that I did that, but I do not want to argue with a professor I have for the rest of the semester and future classes to come.

Case Study (Continued)

I am not sure where to go from here. As I said before the only reason I took the exam was because I had no documentation of the concussion at the time, so I figure he would have made me take the exam regardless on 10/2/14.

Let me know how to approach this. I cannot afford making my professor mad or hate me because I have future classes with him. Is there anything I can do?

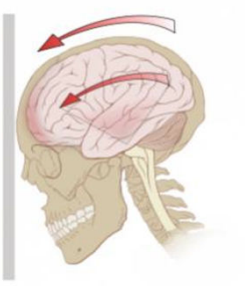
Thank you

Concussion in the United States

- CDC estimates that between 1.6 and 3.3 million sports and recreational related concussions each year
- Students also sustain concussions from nonsports activities such as motor vehicle accidents, falls, and assaults.
  - Estimates conservative given patients with concussion frequently do not seek treatment
  - Football, soccer, ice hockey among most common
  - Student athletes face predictable academic challenges in days and weeks post injury

Concussion

- Increased susceptibility of the frontal regions after concussion most likely results from direct contusions to this region and the disruption of the extensive connections between the frontal regions and other cortical regions
- Cognitive demands, much like physical demands, can worsen symptoms and can delay recovery



Physical Symptoms

- Headache / nausea
- Dizziness / balance problems
- Photophobia / blurred vision
- Noise sensitivity
- Neck pain

From: The Symptom Wheel (McAvoy, 2012)

Cognitive Symptoms

- Concentration
- Remembering
- Mentally foggy
- Slowed processing

From: The Symptom Wheel (McAvoy, 2012)

Emotional Symptoms

- More emotional
- Nervous
- Sad
- Angry

From: The Symptom Wheel (McAvoy, 2012)

Maintenance Symptoms

- Mentally fatigued
- Drowsy
- Sleeping too much
- Sleeping too little
- Can't initiate / maintain sleep

From: The Symptom Wheel (McAvoy, 2012)

Neurocognitive Testing

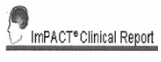
- Used to help determine an athletes pre-injury baseline of cognitive functions in areas that are likely to be affected in a concussion injury

- memory
- attention
- concentration
- reaction time
- processing speed
- response accuracy

Neurocognitive Testing

- Sensitive to the lingering effects of concussion injuries, even when the athletes feel they are fully recovered
- Athletes may minimize or deny concussion symptoms for a variety of reasons
- Pre-season baseline testing important

Neurocognitive Testing – Post Concussion


ImPACT© Clinical Report

Exam Type	Baseline	
Date Tested	09/02/2014	
Last Concussion	09/12/2013	
Exam Language	English	
Test Version	2.1	

Composite Scores	Percentile scores if available are	
Memory composite (verbal)	98	97%
Memory composite (visual)	93	88%
Vis. motor speed composite	47.93	88%
Reaction time composite	0.45	98%
Impulse control composite	16	
Total Symptom Score	0	
Cognitive Efficiency Index:	0.6	

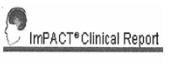
Baseline


ImPACT© Clinical Report

Exam Type	Post-Injury 1	
Date Tested	12/16/2014	
Last Concussion		
Exam Language	English	
Test Version	2.1	

Composite Scores	Percentile scores if available are	
Memory composite (verbal)	98	97%
Memory composite (visual)	82	70%
Vis. motor speed composite	43.13	82%
Reaction time composite	0.56	99%
Impulse control composite	11	
Total Symptom Score	0	
Cognitive Efficiency Index:	0.48	

Failed Retest (injury sustained 12-6)


ImPACT© Clinical Report

Exam Type	Post-Injury 2	
Date Tested	12/17/2014	
Last Concussion		
Exam Language	English	
Test Version	2.1	

Composite Scores	Percentile scores if available are	
Memory composite (verbal)	98	97%
Memory composite (visual)	100	100%
Vis. motor speed composite	44.85	76%
Reaction time composite	0.48	97%
Impulse control composite	33	
Total Symptom Score	0	
Cognitive Efficiency Index:	0.57	

Passed Retest

Example of Return to Play Guidelines

Return to Play Progression:

Step 1: **Rest**

Step: 2: **Light aerobic activity**

Step 3: **Sport-specific exercise**

Step 4: **Non-contact training drills**

Step 5: **Full contact practice**

Step 6: **Return to play**

Example of Return to Play Guidelines

Return to Activity. Student-athletes suffering a concussion must be sign/symptom free at rest for a minimum of 24 hours and be cleared by a licensed physician before starting the Return to Play (RTP) progression. Student-athletes will complete the following progression in sequence before returning to full activity. The student-athlete must remain sign/symptom free for 24 hours following each step before progressing to the next step. If signs and symptoms occur during a step, the student-athlete will revert back to the previous step for a minimum of 24 hours before again attempting the RTP progression.

Clinical Recovery from Concussion

- Studies demonstrate that majority of athletes achieve a complete recovery of symptoms, cognitive dysfunction, and other impairments over a period of approximately 7-10 days post-injury
- Persistence of symptoms or impairments may extend for several weeks

Physiological Recovery from Concussion

- Less clear than clinical recovery
- Findings from recent studies using advanced imaging techniques suggest that physiological abnormalities can be detected beyond the point of recovery from symptoms and cognitive functioning
- Impact on school, work, and social performance?

Academic Support During Recovery

- Post-concussion symptoms often interfere with:
  - Ability to do academic work
  - Participate in the classroom setting
  - Function interpersonally with peers and parents

Reasonable Accommodations (McGrath, 2012)

1. Excused Absences from Classes
   - Several days of complete rest, progressing to limited attendance, may be needed
   - Do not penalize for work not completed during recovery

Reasonable Accommodations

- 2. Rest Periods During the School Day
  - When symptoms flare, brief rest and pain medication (as directed by a physician) may allow the student to return to class
  - Need to educate others that mental fatigue can manifest into emotional meltdowns

Reasonable Accommodations

- 3. Extension of Assignment Deadlines
  - Information processing speed and ability to handle full workload may be impeded

Reasonable Accommodations

- 4. Postponement of Staggering of Tests
  - Mental effort to prepare and then take test may worsen symptoms

Reasonable Accommodations

- 5. Excuse from Specific Tests and Assignments
  - Relieves emotional pressure and allows return to regular workload as soon as possible

Reasonable Accommodations

- 6. Extended Testing Time
  - Information processing speed may be impeded

Reasonable Accommodations

- 7. Accommodation for Oversensitivity to Light, Noise, or Both
  - Fluorescent light and high stimulation environments may cause symptoms
  - Sunglasses
  - Quiet room / environment

Reasonable Accommodations

- 8. Excuse from Team Sport Practice and Gym Activities
  - No physical activity progresses to limited physical activity, as tolerated

Reasonable Accommodations

- 9. Avoidance of Other Physical Exertion
  - Monitor backpack weight, stair use, playing of wind instruments

Reasonable Accommodations

- 10. Use of a Reader for Assignments and Testing
  - Lessens visual scanning and concentration demands

Reasonable Accommodations

- 11. Use of a Note Taker or Scribe
  - Lessens attentional, visual, and concentration demands

Reasonable Accommodations

- 12. Use of Smaller, Quieter, Examination Room to Reduce Stimulation and Distraction
  - Lessens stimulation and distraction

Reasonable Accommodations

- 13. Preferential Classroom Seating
  - Lessens distraction

Reasonable Accommodations

- 14. Temporary Assistance of a Tutor
  - Assists in organizing and prioritizing assignments

Recovery

- Recent findings support the concept of a "no exposure" and recovery period that extends beyond the simple point at which the athlete is symptom-free and clinical testing returns to normal (McRea et al., 2010; Prichep, et al. 2013).
- Student athletes with a history of multiple concussions may show lingering cognitive deficits on post concussion testing and persisting performance deficits in schoolwork that are consistent with long term cognitive disabilities (McGrath, 2010).

Summary: Concussion Management – Classroom and Return to Play Progression

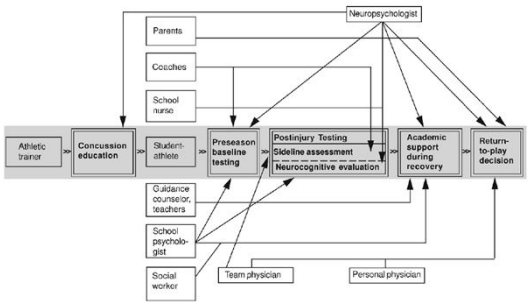


Figure. Model for concussion management in the student-athlete.

McGrath, 2012

Conclusions

- Successful return to academic, social, and athletic participation following concussion requires communication and collaboration among healthcare and educational team.
- Best practice that concussed student always return to school with a signed release of information in place to allow two way communication between school and healthcare provider (McAvoy, 2009)

References

McAvoy, K. (2012). Research Based Practice – Return to learning: Going back to school following a concussion. *NASP Communique, 40*(6). http://www.nasponline.org/publications/cq/40/6/return-to-learning.aspx.

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Prichep, L., et al. (2013). Time course of clinical and electrophysiological recovery after sports related concussion. (2013). *Journal of Head Trauma Rehabilitation, 28*(4), 266-273.