Concussion: An Example of a Return to School Protocol

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What is a Concussion

- Complex pathophysiological processes induced by biomechanical forces affecting the brain
- Result in diffuse damage that is not typically detectable by neuroimaging
- Patterns of symptoms (physiological, affective, and/or cognitive)
- Most research has focused on short-term deficits
  - However, emerging research suggests there may be more subtle, long-term impacts from concussion (e.g. Barry & Tomes, 2015)
Concussion & University

Most individuals experience concussion symptoms for a short period of time
21% for 3-9 days, 24% for 10 days-1 month (Barry & Tomes, 2015)

During this period, physical and cognitive rest is the typical recommendation

...but for university students this rest could have a profound impact on their academic performance
The inspiration for the MTA Concussion Return to School Protocol

The story of “Nick”
- Repeated concussions, developed post-concussive syndrome
- Had very diverse experiences with professors when seeking accommodations

Protocol was a way to give back to the students who participated in my research
Most schools have Return to Play protocols
- Formal procedures for returning to sport activities following a concussion
- Some US elementary or secondary schools had steps to return to academic work
- But I could not find any university or college level protocols or recommendations
Mount Allison University
Small, primarily undergraduate university on the east coast of Canada (Sackville, NB)
~2,500 undergraduate students
The MTA Return to School Protocol

- Provide suggestions based on research findings
  - From the concussion literature and other rehabilitation literatures

- No recommendations are mandatory
  - This flexibility allows students and instructors to tailor accommodations and strategies for each individual case and/or class

- Students urged to follow instructions from medical personnel
The importance of education, knowledge, and valid information

More information about concussions is associated with reduced recovery time and decrease chance of developing post-concussive syndrome

Hall, Hall, & Chapman, 2005; McAllister & Arciniegas, 2002; Schnadower, Vazquez, Lee, Dayan, Roskind, 2007
Dealing with concussions: Advice for students & student athletes

What is a concussion?
A concussion is a mild traumatic brain injury. Although they are “mild”, concussions do involve an injury to the brain and it is important that you allow yourself time to heal. At a microscopic level, the neuronal axons in your brain have been stretched and torn and a number of brain areas will be affected by this damage.

How long does a concussion last?
Many people recover quickly and are able to return to normal activities within a week or two, however for others it will take longer to recover. Unfortunately, there is no way to predict how quickly someone’s concussion will heal.

Symptoms:
There are a wide range of symptoms associated with concussions. Common symptoms include:
- Headaches, dizziness & fatigue
- Balance or coordination problems
- Nausea/vomiting
- Feeling “dinged”, “foggy”, “stunned”, or “dazed”, mental confusion
- Being easily distracted, poor concentration
- Delayed response to questions
- Slurred speech
- Vacant staring or glossy eyed
- Increased sensitivity to light, noise and smells
- Visual problems (seeing stars, flashing lights, double vision)
- Hearing problems (ringing in the ears, difficulty hearing)
- Irritability or aggression
- Emotional changes (e.g. anxiety or depression)
- Personality changes
- Problems with memory, difficulty remembering things

Disclaimer: the information presented here should not take precedence over medical advice. Please make sure you follow any instructions given to you by medical personnel.
How to deal with your concussion

The most important thing for you to do is **rest**, both **physically and mentally**, while you are recovering from your concussion. This rest will allow your brain time to heal.

**Immediately following your concussion** you should stop all physical/athletic and academic activities for at least 24 hours.

During this time you should avoid:
- excessive movements
- bright lights
- school work
- working on a computer, tablet or smart phone
- playing video games
- watching TV
- reading

All of these activities may trigger or worsen your concussion symptoms. You should reassess your symptoms after you have rested.

**Step-wise return to play policy**

It is essential that you wait for your concussion to heal before you resume physical activity. Attempting to return to play before your symptoms resolve may increase the length of your recovery time and also puts you at risk for more serious injuries.

**After you have been symptom free for at least 24 hours, contact the athletic therapist to discuss your return to play.** You should begin physical/athletic activities “a bit at a time” and under the athletic therapist’s guidance. If symptoms return while performing any of the steps described below stop immediately and return to rest. If your symptoms do not return after 24 hours, you may move on to the next step in the sequence.

1. **Start with light cardio activity** for a maximum of 20 minutes. Stop immediately if any of your symptoms return. The goal is to reach approximately 60% of your maximum heart rate.

2. **Return to sport specific drills** of approximately 30-40 minutes. There must be absolutely no contact during these drills.

3. **Return to full practice with a red shirt (no contact)**. The goal is to reach maximum heart rate.

4. **Return to full practice**. You must complete a full practice before returning to competition.

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**Concussion & Alcohol**

It is recommended that you do not drink alcohol while concussed. The concern is not alcohol itself, but that alcohol may make your symptoms worse (i.e. headaches, nausea, dizziness) and intoxication may put you at a heightened risk for a second impact (for example, by making you dizzy and more likely to trip and fall). Also, after a concussion your decision-making may already be impaired and intoxication may further impair your ability to make appropriate decisions. It is also recommended that you avoid any drugs that have not been prescribed to you by your physician for similar reasons.
The 4 Steps of the MTA Return to School Protocol

After you have been symptom free for at least 24 hours, you can begin the return to academic activities. If symptoms return or worsen while performing any of the steps described below it is recommended that you return to rest.
1. Prepare to return to academic activities

- Begin to engage in *light mental activity* (for example, reading) for short periods of time (for example, 15 minutes a couple of times per day).

- Limit other mental/cognitive activities, especially those known to worsen concussion symptoms like using a computer, texting and playing videogames.

- The goal is to begin to engage in short periods of light mental activity while avoiding any activities likely to trigger or worsen symptoms.
2. **Begin light academic activities**

> Return to class.
> You may wish to return to a single class, or a limited number of classes at first; pick a class that is scheduled during a time period where you are typically alert and symptom-free.
> Try to arrange for someone else to take notes; focus on paying attention and participating during class times.
> Change your seating arrangement if you find you are easily distracted (for example, ask to sit at the front of the room so you are not sidetracked by students in front of you).
Work on short/small assignments.
Work for short periods of time and rest between academic work sessions.
Avoid working on a computer if it causes headaches, eye strain, or neck/head tension.

Begin reading course materials for short periods of time.
Continue to limit other problematic cognitive activities (e.g. playing on the internet, texting, watching TV, etc.) to short periods of time.

The goal is to increase the amount of time you can spend on mental/academic activities and also to increase the number of mental/academic activities you engage in.
3. Increase your academic workload

- Return to more/all classes.
- Begin taking notes during class time.
- Work on major assignments, tests and projects.

The goal is to return to normal levels of mental/academic activities.
4. **Return to your normal academic workload**

- Return to all classes.
- Arrange to take tests & complete missed work
Dealing with persistent symptoms?

Identify environmental factors that may trigger or worsen symptoms. Common triggers include:

- **lighting**: many individuals recovering from concussions are light sensitive. Try to avoid very bright or “flickering” lights as they may induce headaches or dizziness.
- **scented**: scent-sensitivity may be increased after a concussion.
- **environmental distractors**: some individuals recovering from a concussion will be easily distracted and may have lowered ability to ignore things in their environment.
- **ergonomics**: avoid positions that may put additional strain on the neck/shoulders to avoid triggering a headache.
- **headache triggers**: headaches are common when recovering from concussion. Common headache triggers include emotional stress, sleep disturbances, bright lights, smells, or hunger. Relaxation training may be a helpful, non-drug treatment option for persistent headaches.

Fatigue and Emotional Issues

Many people are surprised to hear that sleep disturbances and emotional issues are symptoms associated with concussion. Although not everyone will experience these symptoms, many people will find they are extremely fatigued or do not feel well rested even after a full night’s sleep, and others will experience insomnia (inability to sleep). **It is very important that you get enough rest/sleep during your recovery.** Try to set up a regular sleep-wake cycle. Make sure you go to bed at a reasonable time and get up at a consistent time each morning.

Fatigue and sleep deprivation can make the other symptoms of concussion even worse. One example of this is mood or emotional disturbances. Again, not everyone with a concussion will experience mood or emotional problems, but they are common symptoms. Although it is “normal” to experience some anxiety, mild depression, or mood changes while recovering from a concussion, you should contact your physician or the Wellness Centre if your symptoms are severe.
<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>GENERAL RECOMMENDATIONS</th>
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<tbody>
<tr>
<td>Headaches when working on a computer</td>
<td>Avoid using a computer as much as possible until your symptoms lessen/go away</td>
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<td></td>
<td>Increase the font size or magnification of the document</td>
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<td></td>
<td>Make sure there is a sharp contrast between the text and background colours</td>
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<td></td>
<td>Avoid displays or websites with rapidly changing displays (e.g., flashes, vivid lights</td>
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<td>or colours, etc.)</td>
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<td>Make sure you are not putting increased tension on your shoulders, neck &amp; head</td>
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<td></td>
<td>Wear your glasses/contact lenses (if required)</td>
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<td>Unfocussed, difficulty with attention</td>
<td>Break tasks/assignments into smaller units</td>
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<td>Focus on one step of an assignment at a time</td>
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<td>Avoid multi-tasking: turn off your phone and other diversions while working</td>
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<td>Avoid working in a distracting environment (e.g., noisy, lots of people, lots of</td>
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<td></td>
<td>movement)</td>
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<td>Problems with sustained attention,</td>
<td>Do not try to focus/pay attention for long periods of time, especially soon after a</td>
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<td>can’t focus for long periods of time</td>
<td>concussion</td>
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<td>Take frequent breaks during the break make sure you are not engaging in another</td>
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<td>taxing activity, the point is to rest</td>
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<td>Practice focusing your attention for longer and longer periods of time (e.g., train</td>
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<td>your attention)</td>
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<td>Get a note-taker for your classes, ask permission to record classes, or ask professor</td>
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<td>if he/she is willing to give you copies of class/lecture materials</td>
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<td>Difficulty processing written</td>
<td>Increase the font size of printed material</td>
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<td>information</td>
<td>Double space everything</td>
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<td></td>
<td>Try to make units of information perceptually distinct (e.g., put extra spaces between</td>
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<td>paragraphs, questions, or assignment questions)</td>
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<td>Reduce the amount of information per page (e.g., put few questions or points on each</td>
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<td>page)</td>
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<td>Use strategies to help focus your attention like moving your finger under text as you</td>
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<td>read it, or using a ruler to remind you which line of text you should be focusing on</td>
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<td></td>
<td>do not use these strategies if they trigger other symptoms (such as dizziness)</td>
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<tr>
<td>Semantic memory deficits; difficulty</td>
<td>Make sure you use effective study strategies. You may find it more difficult to learn</td>
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<td>finding the appropriate word</td>
<td>new information following a concussion, therefore it is important that you use the</td>
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<td>most effective study strategies possible</td>
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<td>Use a dictionary or thesaurus when you have problems thinking of a particular word</td>
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<td>Try to use gestures to help you find the word you are looking for</td>
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<td>Try to remember the sounds of the word you are looking for (rather than focusing on</td>
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<td>the meaning)</td>
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<td>Short-term memory deficits</td>
<td>Make sure you pay attention...some problems with short-term remembering are due to</td>
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<td>attention problems</td>
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<td>Do not try to remember too much information at one time</td>
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<td>Write things down; try to either carry a small notepad or use an app</td>
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<td>Ask for written instructions for any new information you are given (e.g., how to take</td>
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<td>new medications or new class assignments)</td>
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<td>Repeat back instructions or other important information (this not only helps you</td>
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<td>remember it, but also makes sure you understand it correctly)</td>
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<td>Gradually train yourself to hold small amounts of information in memory for longer and</td>
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<td>longer periods of time before recalling them (e.g., train your memory)</td>
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<tr>
<td>SYMPTOM</td>
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| Prospective memory problems (remembering to do things in the future) | • Use a calendar to remind you of appointments (electronic calendars or other apps with a “reminder” function can be very helpful).  
• Try to create physical reminders (e.g., put your medication container on the kitchen counter near where you make your breakfast to remind you to take your medication in the morning).  
• Avoid procrastinating... do not give yourself the opportunity to forget.  
• Avoid multi-tasking... if you start to do something else you are more likely to forget to do another task.  
• Link what you need to do to another well-established habit (e.g., take your medication right after you brush your teeth each morning).  
• Ask your professor or a friend to give you reminders of upcoming due dates. |
| Difficulties as a result of mental slowness; it takes time to think & respond to things | • Monitor your performance... are you missing parts of the conversation? Do not be afraid to ask someone to slow down or repeat what they just said.  
• Try to anticipate what will be involved in various tasks (e.g., what will you be doing in a science lab today... what are the steps involved? Or, are you going to visit your professor, what do topics do you want to discuss with him/her?).  
• Do things in advance to prepare for time-based tasks (e.g., ask your instructor if you can review the protocols you will be using in your science lab before lab time? Or, write down all the topics you want to cover during a meeting).  
• Avoid becoming panicked, overwhelmed, or rushed... develop strategies to help yourself if you start to feel overwhelmed.  
• Be aware of when you are becoming overwhelmed... if you start to feel panicked or feel like you have a “full head,” take a moment, pause, re-orient yourself.  
• If there are situations where you commonly feel overwhelmed, try to figure out strategies in advance to deal with those specific situations. |
| Difficulty planning | • Use an organizer, scheduling app or calendar to remind you of upcoming events & deadlines.  
• Make a “To do” list each day; list things in the order of importance (list what you must do first, put things you would like to get done at the bottom of the list).  
• Make a list of steps for tasks you need to do and when they need to be done; check off each step as you complete it.  
• Ask professors, TAs or classmates to help you organize/plan the necessary steps for complex or difficult assignments.  
• Create a “home work” or “assignment” folder where you keep copies of the requirements for your academic work. |
| Fatigue | • Fatigue will increase other symptoms and proper rest is required for recovery.  
• Make sure you stick to a normal sleep-wake cycle (e.g., go to bed early, do not stay up all night) and try to get a full night’s sleep.  
• Adjust your schedule so you can do important tasks when you are most alert and symptom-free (for most people this will be late morning or early afternoon).  
• Avoid scheduling back-to-back activities, especially early on in your recovery. |
| Mood or emotional issues | • Be aware that concussions can impact mood and emotional well-being.  
• Seek assistance from the Wellness Centre if the symptoms you are experiencing are severe or disturbing.  
• Ask friends and family to monitor for changes in your mood and/or personality. |
Information for Instructors

- General information regarding concussions
- Recommendations for helping concussed students
  - Postpone tests and assessments *
  - Remove non-essential material, re-weight assessment
  - Preferential classroom seating
  - Provide written documents
  - Allow memory aids (where appropriate)
  - Encourage the use of note-takers or provide lecture material
  - Transform course materials
Implementation of the Protocol
Began in 2015/16
11 student participated in the protocol

Administered by the Meighen Centre

http://www.mta.ca/meighen/
Temporary disability form can be completed by a variety of different people
Do not necessarily need a “doctor’s note”
Email sent to professors informing them the student has a concussion
Also provides information for professors/instructors
Concussed student “walked through” the informational booklet at initial meeting
Most common accommodations

- Delays and extensions for academic work
  - Until symptoms subside
- Note-takers
  - Information from missed classes
  - When the student returns to class to help with attention
- Late withdrawals from classes
  - Often only one or two classes
What do the students appreciate most?

- The initial meeting
- Support from someone “official”
- Reassurance that certain symptoms are part of a concussion
- Assistance getting “back on track” after a concussion
- Note-takers
  - Alleviates stress of missed classes
- Not having to contact all their professors individually
Other benefits

- Message to instructors comes from an official source
- Virtually no “push back” from faculty members
- Endorsed by the Athletics Department
  - May help shift attitudes towards concussion and sports
  - Reinforces the importance of academics
- Promotes accurate information about concussions
  - For both students and professors
Improvements and Recommendations

- No suggestions for improvement from students
  - They say it is valuable and should be continued

- Meighen Centre liked the flexibility of the protocol
  - Different strategies or accommodations for different individuals

- Improved awareness of the protocol
  - One student-athlete was referred by their professor!

- Currently serving several students with post-concussive syndrome
Questions or Comments?