Concussion Management: Is Brain Rest Best?

Family Medicine Grand Rounds
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Outline

- Why I’m doing this talk: case study
- Concussion symptoms and diagnosis
- Management of initial symptoms, including brain rest
- What is the “post concussion syndrome”?
- Management of later symptoms

Conflicts of Interest

- Aside from wanting the most utd evidence in regard to my own concussion, I have none

What comes to mind when you hear concussion?

Concussion

- Aka Mild Traumatic Brain Injury (mTBI)

- **Acute neurophysiological event** related to blunt impact or other mechanical energy applied to the head, neck or body (with **transmitting forces to the brain**), such as from sudden acceleration, deceleration or rotational forces

- Incidence in Canadian study between 493-653/100,000 (primary care physician vs. secondary reviewer)

Knowledge Gaps

- Significant gaps in family medicine residents' knowledge surrounding diagnosis and management (Mann, Tator, & Carson, 2017)

Figure 3. Respondents who failed to recognize aspects of appropriate management of concussive injury

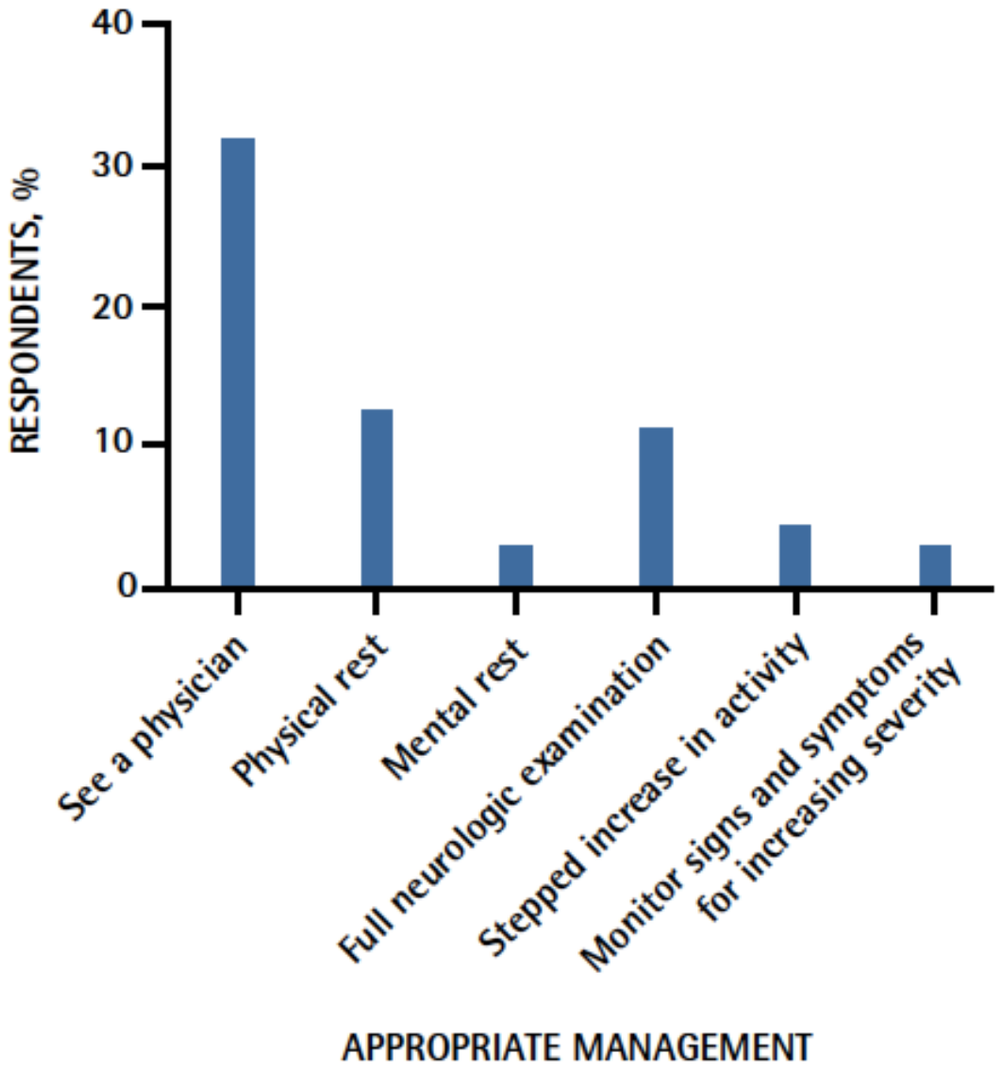
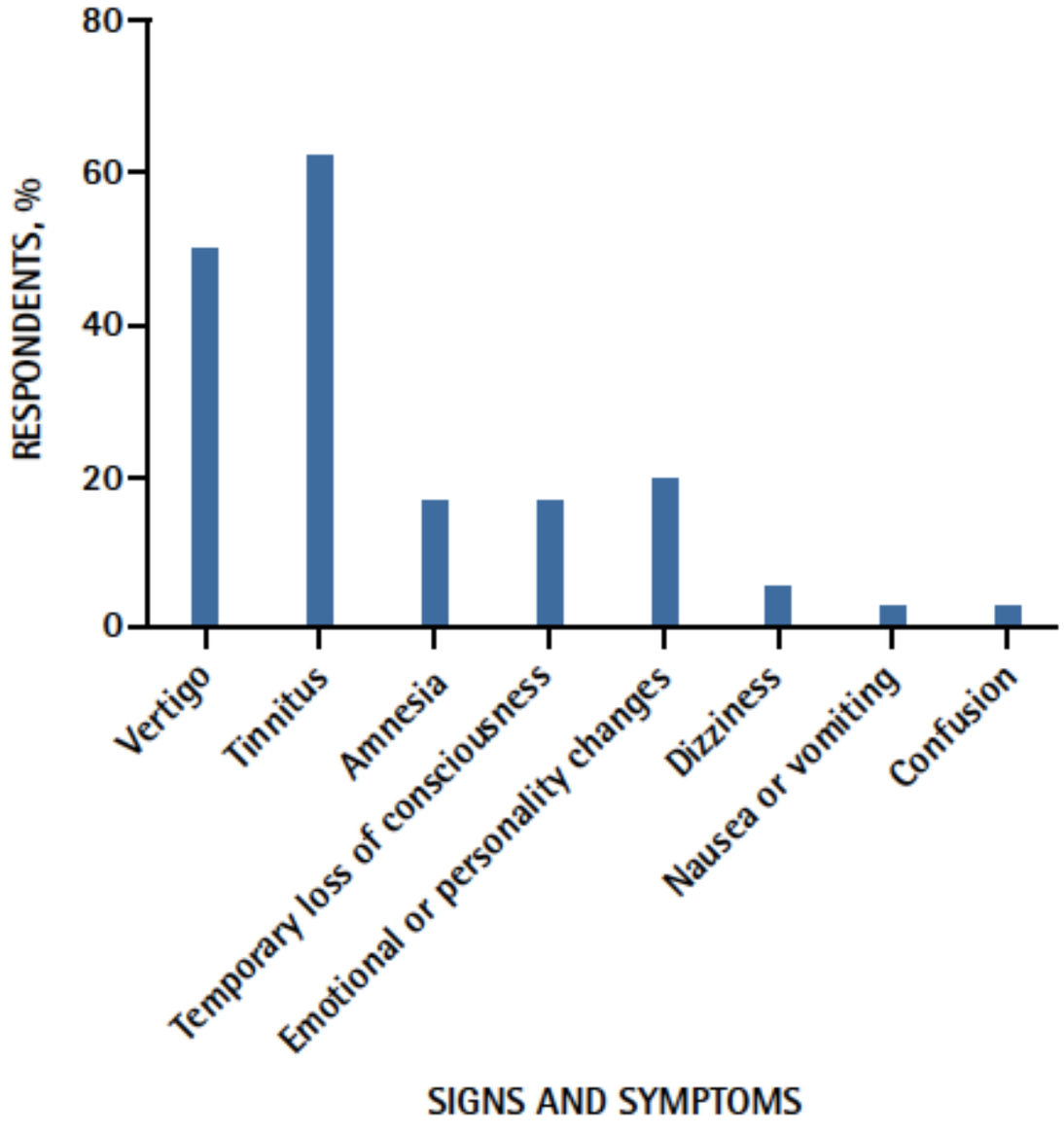


Figure 4. Respondents who failed to recognize signs or symptoms of concussion



Guideline for Concussion/Mild Traumatic Brain Injury & Persistent Symptoms

Healthcare Professional Version

Third Edition

Adults (18+ years of age)

Ontario Neurotrauma Foundation

Fondation ontarienne de neurotraumatologie

True or false: Imaging is required to rule out intracranial pathology

True

False

Diagnosis

- Clinical!
- No consistent patterns seen on imaging at this time
- ? some promising developments with DTI
  - DTI = diffusion tensor imaging, MRI technique which can see white matter changes in brain

Assessment

Table 1.2. Key Features of mTBI Assessment in an Emergency Department or Doctor's Office

(a) A medical history encompassing a review of: • Current symptoms and health concerns • Setting and mechanism of injury • Severity/duration of altered consciousness and immediate symptoms • Presence of co-occurring injuries • Pre-existing medical and mental health conditions • Potentially contributing psychosocial factors
(b) An examination including an assessment of: • Mental status and cognition • Physical status • Cranial nerves • Extremity tone, strength, and reflexes • Gait and balance
(c) An assessment of the patient's clinical status, including whether there has been improvement or deterioration since the time of injury. This may require additional information from others, including eyewitnesses to the injury.
(d) Determination of the need for urgent neuroimaging to exclude a more severe brain injury (see Figure 1.1), such as a structural abnormality or hemorrhage.

TABLE 3

Focused Neurologic Examination for Suspected Concussion: Findings Suggestive of More Severe Injury

Assessment*	Findings
Balance†	Positive Romberg sign, postural instability, unsteadiness
Cranial nerves	Difficulties with vision, unequal or fixed dilated pupils, abnormal extraocular movements, or other abnormal cranial nerve findings may be suggestive of brainstem lesion
Deep tendon reflexes	Hyperreflexia or presence of Babinski reflex suggest an upper motor neuron lesion
Finger-to-nose test	Abnormal finding suggests coordination deficit
Gait	Ataxic gait may suggest cerebellar dysfunction
Mental status‡	Prolonged loss of consciousness (more than 30 minutes), somnolence or confusion, disorientation or posttraumatic amnesia for more than 24 hours, deficit in language and speech
Muscular strength	Weakness or unequal strength, decreased tone; involuntary movements may indicate basal ganglia or cerebellar injury
Sensory assessment of dermatomes§	Numbness or abnormal sensation can be traced to spinal nerve root

*—Evidence is lacking as to what a focused neurologic examination should include. Most patients with a concussion have cognitive and memory deficits; therefore, any focal neurologic deficit should prompt immediate further evaluation for possible intracranial lesion.
†—Standard balance examinations are not sensitive to subtle changes in concussion. Postural stability tests have low to moderate sensitivity but strong specificity for diagnosis (see eTable A for examples of these tests).
‡—Standard orientation questions are not sensitive to subtle changes in concussion. Maddocks questions (eTable A) are sensitive and effective for sideline use.
§—Sensory examinations are subjective and may be difficult to perform on uncooperative patients or those with cognitive deficits.

Adapted with permission from Scorza KA, Raleigh MF, O'Connor FG. Current concepts in concussion: evaluation and management. Am Fam Physician. *2012;85(2):128.*

Immediate symptoms/signs might include:

- LOC or decreased consciousness <30 min
- Amnesia immediately before or after injury < 24h
- Alteration in mental state at the time of the injury (e.g., confusion, disorientation, slowed thinking, alteration of consciousness/mental state).
- Physical Symptoms (e.g., vestibular, headache, weakness, loss of balance, change in vision, auditory sensitivity, dizziness).
- No evidence of intracranial lesion on standard imaging if indicated (if present, suggestive of more severe brain injury)

Symptoms of Concussion

Physical	Behavioural/Emotional	Cognitive
Headache Nausea Vomiting Blurred or double vision Seeing stars or lights Balance problems Dizziness Sensitivity to light or noise Tinnitus Vertigo	Drowsiness Fatigue/lethargy Irritability Depression Anxiety Sleeping more than usual Difficulty falling asleep	Feeling "slowed down" Feeling "in a fog" or "dazed" Difficulty concentrating Difficulty remembering

Adapted from Willer B, Leddy JJ. Management of concussion and post-concussion syndrome. Current Treatment Options in Neurology. 2006;8:415-426; with kind permission from Springer Science and Business Media.

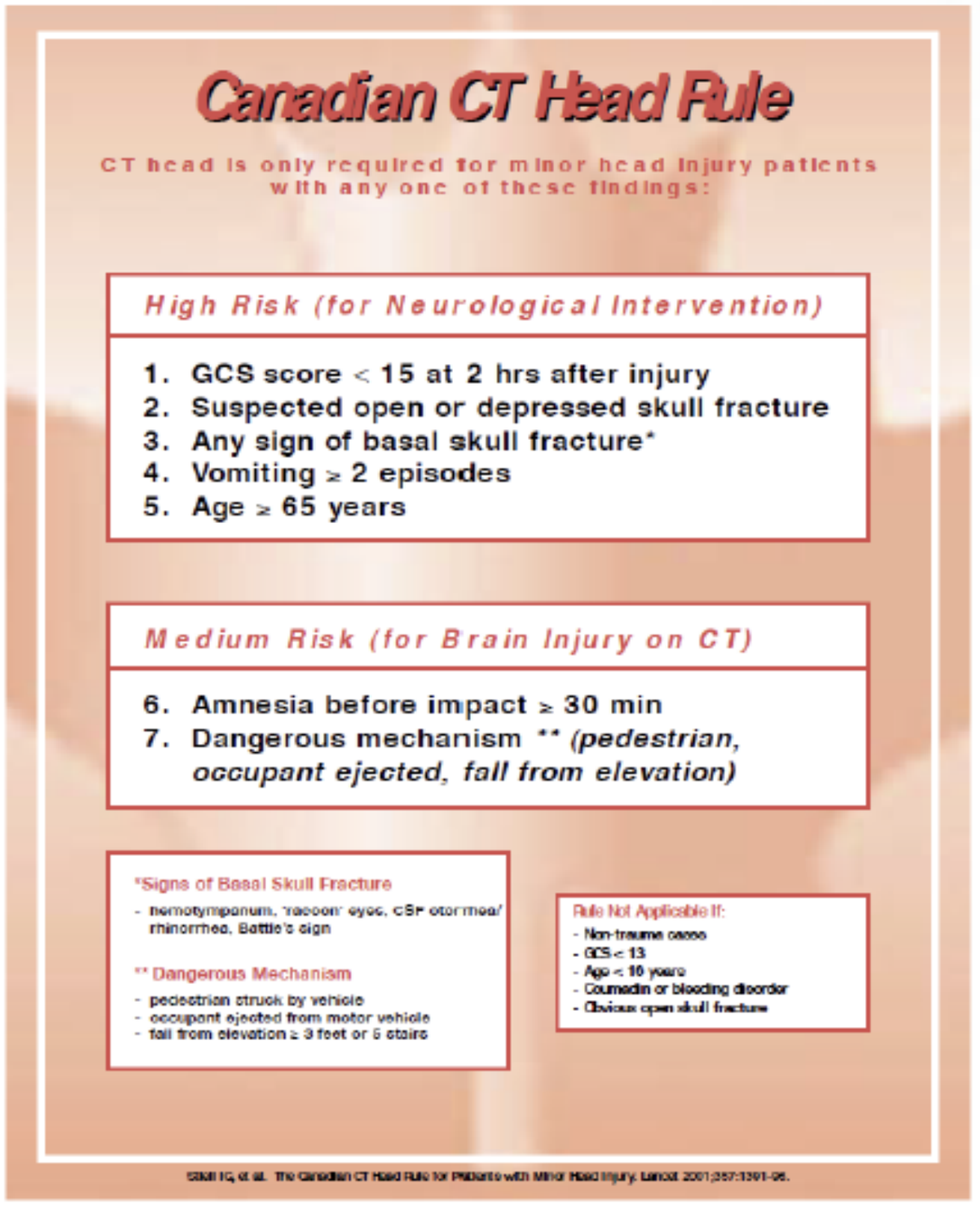
How many symptoms are required for diagnosis of concussion?

1

2

3 or more

Imaging: Follow Canadian CT head rule



Acute Concussion Evaluation (ACE): Physician/Clinician Office Version

Acute Concussion Evaluation (ACE)

Physician/Clinician Office Version

Gerard Gioia, PhD[1] & Micky Collins, PhD[2]
[1]Children's National Medical Center
[2]University of Pittsburgh Medical Center

Patient Name:_____
DOB: _____ Age:_____
Date:_____ ID/MR#_____

A. Injury Characteristics **Date/Time of Injury**_____**Reporter: __Patient __Parent __Spouse __Other**_____

1. Injury Description _____

_____

1a. Is there evidence of a forcible blow to the head (direct or indirect)? __Yes __No __Unknown
1b. Is there evidence of intracranial injury or skull fracture? __Yes __No __Unknown
1c. Location of Impact: __Frontal __Lft Temporal __Rt Temporal __Lft Parietal __Rt Parietal __Occipital __Neck __Indirect Force
2. Cause: __MVC __Pedestrian-MVC __Fall __Assault __Sports (*specify*)_____Other_____
3. Amnesia Before (Retrograde) Are there any events just BEFORE the injury that you/ person has no memory of (even brief)? __ Yes __No Duration
4. Amnesia After (Anterograde) Are there any events just AFTER the injury that you/ person has no memory of (even brief)? __ Yes __No Duration
5. Loss of Consciousness: Did you/ person lose consciousness? __ Yes __No Duration
6. EARLY SIGNS: __Appears dazed or stunned __Is confused about events __Answers questions slowly __Repeats Questions __Forgetful (recent info)
7. Seizures: Were seizures observed? No__ Yes___ Detail_____

B. Symptom Check List* Since the injury, has the person experienced any of these symptoms any more than usual today or in the past day?
Indicate presence of each symptom (0=No, 1=Yes). ****Lovell & Collins, 1998 JHTR***

PHYSICAL (10)		COGNITIVE (4)		SLEEP (4)	
Headache	0 1	Feeling mentally foggy	0 1	Drowsiness	0 1
Nausea	0 1	Feeling slowed down	0 1	Sleeping less than usual	0 1 N/A
Vomiting	0 1	Difficulty concentrating	0 1	Sleeping more than usual	0 1 N/A
Balance problems	0 1	Difficulty remembering	0 1	Trouble falling asleep	0 1 N/A
Dizziness	0 1	**COGNITIVE Total (0-4)** _____		**SLEEP Total (0-4)** _____	
Visual problems	0 1	**EMOTIONAL (4)**			
Fatigue	0 1	Irritability	0 1		
Sensitivity to light	0 1	Sadness	0 1		
Sensitivity to noise	0 1	More emotional	0 1		
Numbness/Tingling	0 1	Nervousness	0 1		
PHYSICAL Total (0-10) _____		**EMOTIONAL Total (0-4)** _____			
(Add Physical, Cognitive, Emotion, Sleep totals) Total Symptom Score (0-22)			_____		

Exertion: Do these symptoms worsen with:
Physical Activity __Yes __No __N/A
Cognitive Activity __Yes __No __N/A

Overall Rating: How different is the person acting compared to his/her usual self? (circle)

Normal 0 1 2 3 4 5 6 Very Different

C. Risk Factors for Protracted Recovery *(check all that apply)*

Concussion History? Y ___ N___	√	**Headache History?** Y ___ N___	√	**Developmental History**	√	**Psychiatric History**
Previous # 1 2 3 4 5 6+		Prior treatment for headache		Learning disabilities		Anxiety
Longest symptom duration Days__ Weeks__ Months__ Years__		History of migraine headache __ Personal __ Family_____ _____		Attention-Deficit/ Hyperactivity Disorder		Depression
						Sleep disorder
If multiple concussions, less force caused reinjury? Yes__ No__				Other developmental disorder_____		Other psychiatric disorder _____

List other comorbid medical disorders or medication usage (e.g., hypothyroid, seizures)_____

_____

D. RED FLAGS for acute emergency management: Refer to the emergency department with sudden onset of any of the following:

* Headaches that worsen	* Looks very drowsy/ can't be awakened	* Can't recognize people or places	* Neck pain
* Seizures	* Repeated vomiting	* Increasing confusion or irritability	* Unusual behavioral change
* Focal neurologic signs	* Slurred speech	* Weakness or numbness in arms/legs	* Change in state of consciousness

E. Diagnosis (ICD): __Concussion w/o LOC 850.0 __Concussion w/ LOC 850.1 __Concussion (Unspecified) 850.9 __Other (854) _____

__No diagnosis

F. Follow-Up Action Plan **Complete *ACE Care Plan* and provide copy to patient/family.**

___ **No Follow-Up Needed**

___ **Physician/Clinician Office Monitoring**: Date of next follow-up _____

___ **Referral:**

___ Neuropsychological Testing

___ Physician: Neurosurgery____ Neurology____ Sports Medicine____ Physiatrist____ Psychiatrist____ Other_____

___ Emergency Department

ACE Completed by:_____

This form is part of the "Heads Up: Brain Injury in Your Practice" tool kit developed by the Centers for Disease Control and Prevention (CDC).

Sport Concussion
(not the focus of this talk)

- Can use a tool such as the SCAT5, child SCAT5

Management

Is brain rest best?

- How many people have been taught that you need to rest your brain following concussion?

How long should brain rest be recommended?

24-48h

1 week

2 weeks

4 weeks

Until asymptomatic

True or false: Patients have to be completely asymptomatic prior to returning to work/sport

True

False

Family Medicine Residency circa 2014

thinkfirst pensezd'abord CANADA

Parachute
PREVENTING INJURIES. SAVING LIVES.

WHEN CAN MY CHILD RETURN TO SPORT?

IT IS VERY IMPORTANT THAT YOUR CHILD NOT GO BACK TO SPORTS IF HE/SHE HAS ANY CONCUSSION SYMPTOMS OR SIGNS. Return to sport and activity must follow a step-wise approach:

STEP 1) **No activity, complete rest. Once back to normal and cleared by a doctor, go to step 2.**

STEP 2) **Light exercise such as walking or stationary cycling, for 10-15 minutes.**

STEP 3) **Sport specific aerobic activity (ie. skating in hockey, running in soccer), for 20-30 minutes. NO CONTACT.**

STEP 4) **"On field" practice such as ball drills, shooting drills, and other activities with NO CONTACT (ie. no checking, no heading the ball, etc.).**

STEP 5) **"On field" practice with body contact, once cleared by a doctor.**

STEP 6) **Game play.**

NOTE: **EACH STEP MUST TAKE A MINIMUM OF ONE DAY.** If your child has any symptoms of a concussion (e.g. headache, feeling sick to his/her stomach) that come back either during activity, or later that day, your child should stop the activity immediately and rest until symptoms resolve, for a minimum of 24 hours. Your child should be seen by a doctor and cleared again before starting the step wise protocol again.

Is brain rest best?

EvidenceAlerts for: April 3, 2019 Inbox ×

evidencealerts@mcmasterhkr.com Wed, Apr 3, 2019, 11:51 PM

to me

EvidenceAlerts | McMaster PLUS™ and *DynaMed Plus®*

Dear Dr. McGregor:

New articles: colleagues in your discipline have identified the following article(s) as being of interest:

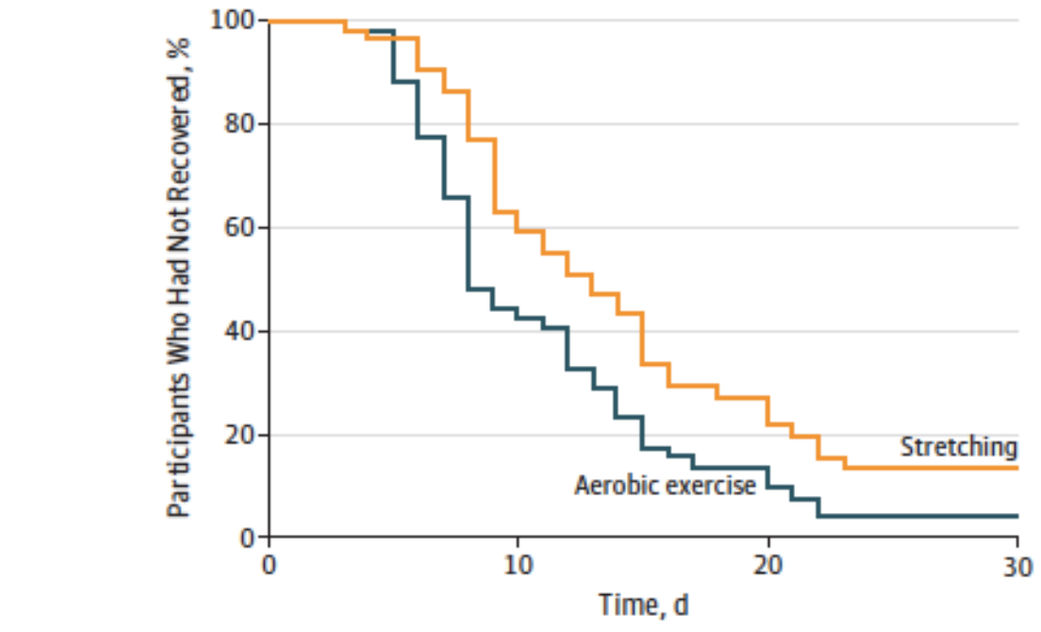
Article Title	Discipline	Rele-vance	News-worthiness
Early Subthreshold Aerobic Exercise for Sport-Related Concussion: A Randomized Clinical Trial. JAMA Pediatr	Family Medicine (FM)/General Practice (GP)	6	7
Use of metformin to treat pregnant women with polycystic ovary syndrome (PregMet2): a randomised, double-blind, placebo-controlled trial. Lancet Diabetes Endocrinol	FM/GP/Obstetrics	6	6
Meta-analysis Comparing Platelet-Rich Plasma vs Hyaluronic Acid Injection in Patients with Knee Osteoarthritis. Pain Med	Family Medicine (FM)/General Practice (GP) General Internal Medicine-Primary Care(US)	6 6	5 5

JAMA Pediatrics | Original Investigation

Early Subthreshold Aerobic Exercise for Sport-Related Concussion
A Randomized Clinical Trial

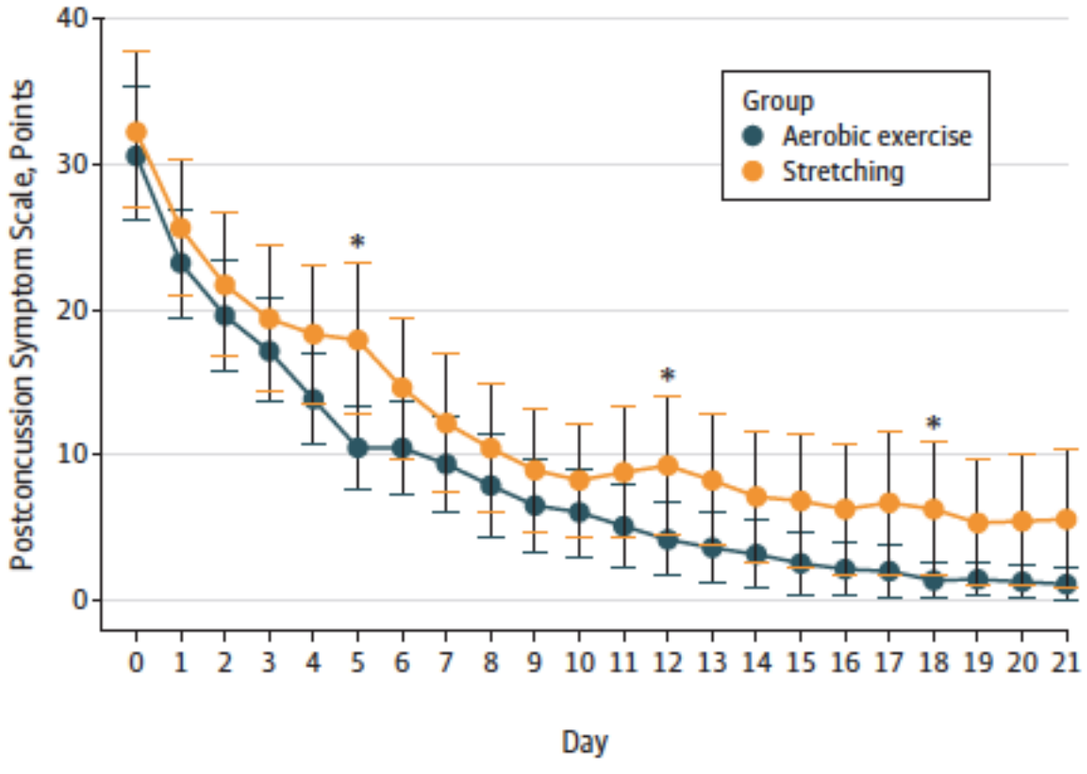
John J. Leddy, MD; Mohammad N. Haider, MD; Michael J. Ellis, MD; Rebekah Mannix, MD; Scott R. Darling, MD; Michael S. Freitas, MD; Heidi N. Suffoletto, MD; Jeff Leiter, PhD; Dean M. Cordingley, MSc; Barry Willer, PhD

Figure 2. Kaplan-Meier Estimates of Time to Recovery



Survival analysis comparing groups; the aerobic exercise group recovered significantly faster than the stretching group after adjusting for age, sex, time from injury to first clinical visit, and concussion history ($z = 2.82$; $P = .005$).

Figure 3. Daily Symptom Severity Score per the Postconcussion Symptom Scale

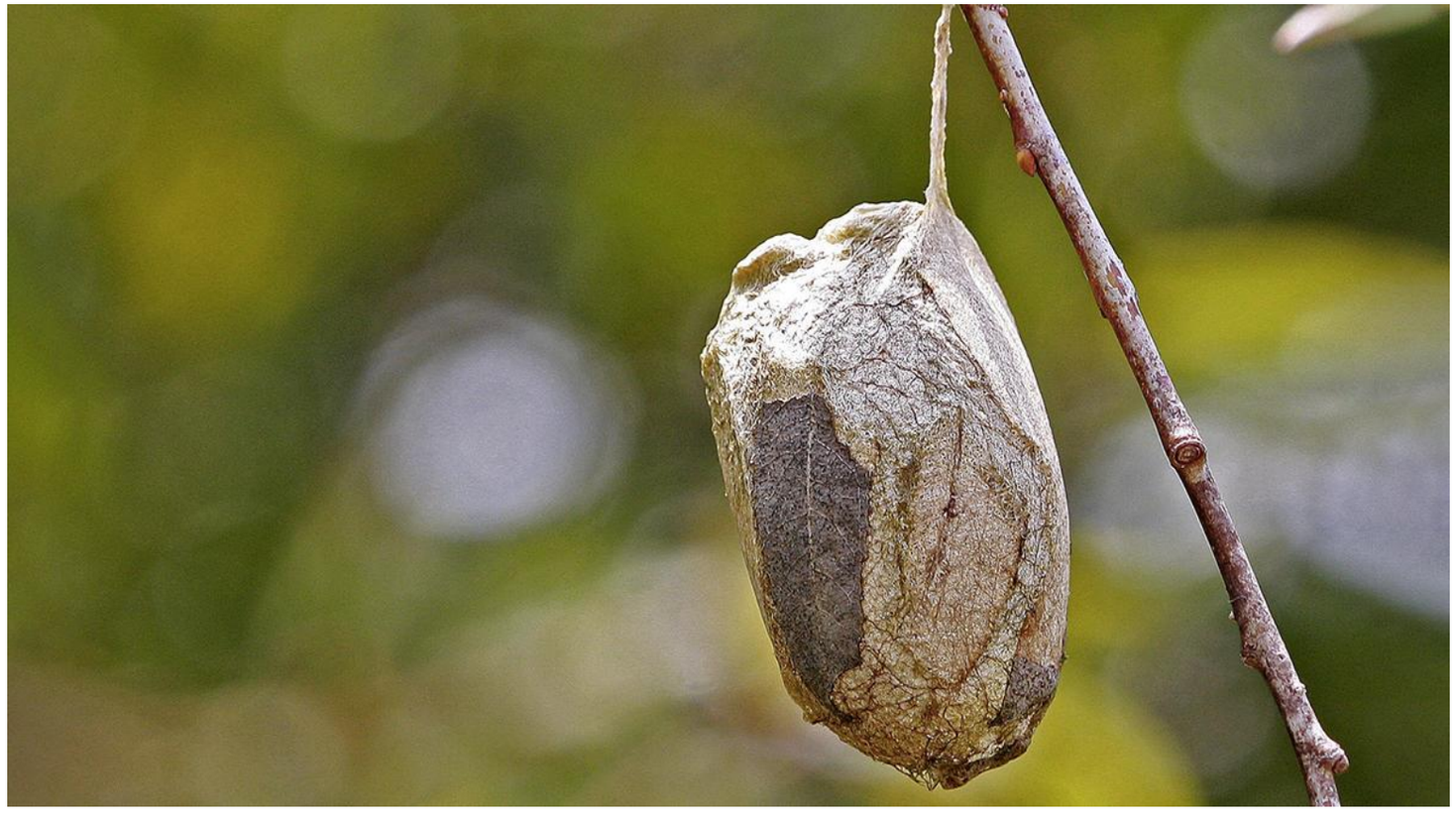


Bars indicate 95% CIs; asterisks, a significant difference on analysis of variance.

CONCLUSIONS AND RELEVANCE This is, to our knowledge, the first RCT to show that individualized subsymptom threshold aerobic exercise treatment prescribed to adolescents with concussion symptoms during the first week after SRC speeds recovery and may reduce the incidence of delayed recovery.

Is brain rest best?

- Extended brain rest associated with longer recovery, more symptoms



(Ontario Neurotrauma Concussion Guidelines, also see Howard et al, 2018 for a review)

Early return to activity beneficial

- Review by Leddy, Wilber, & Willer (2018)

- Studies showing:

- Physical exercise associated with reduced symptoms scores

- Prolonged physical/cognitive rest associated with longer recovery and mood/anxiety disorders

KEY POINTS

- Emerging data identify the central role of ANS dysfunction in concussion pathophysiology.
- There is no evidence that sustained rest from all activities after concussion, so called 'cocoon therapy', is beneficial to recovery.
- Emerging evidence supports the safety, tolerability, and efficacy of controlled sub-symptom threshold aerobic exercise treatment for PCS patients.
- Early active interventions after concussion should be studied for their potential to speed recovery and to prevent some patients from developing PCS.

- “Rest is no longer recommended for an indefinite period of time. After an initial 24 to 48 hours of rest, the worker should be activated. Activation begins using a concept of symptom threshold wherein key symptoms are provoked at certain levels of aggravation. Producing a slight aggravation of symptoms is not harmful and is thought that, over time, will set the threshold higher and higher until normal activities both in and out of work are no longer symptom provoking.”

- (Rhine, 2018)

Return to activity

3.4	There is currently insufficient evidence that prescribing complete rest may ease discomfort during the acute recovery period by mitigating post-concussion symptoms and/or that rest may promote recovery by minimizing brain energy demands following concussion. • An initial period of rest in the acute symptomatic period following injury (24-48 hours) may be of benefit. • After a brief period of rest, a sensible approach involves the gradual return to school and social activities (prior to contact sports) as tolerated (i.e., in a manner that does not result in a significant or prolonged exacerbation of symptoms. See Table 12.2).[a]	**A**

4.5	After a brief period of rest during the acute phase (24–48 hours) after injury, patients can be encouraged to become gradually and progressively more active as tolerated (i.e., activity level should not bring on or worsen their symptoms).[b]	**A**

12.1	Immediately following any concussion/mTBI, patients should be provided with recommendations to avoid activities that would increase their risk for sustaining another concussion during the recovery period, particularly in the first 7-10 days.[a]	**C**

12.3	Patients with concussion/mTBI should be encouraged to gradually resume normal activity (activities of daily living, work, physical, school, duty, leisure) based upon their tolerance as long as the activity is not at specific risk for concussion. Patients should be preemptively cautioned that transient symptom exacerbations with increased activity are common. If symptoms increase in severity then a monitored slower progressive return to normal activity as tolerated should be continued.[a]	**A**

Ontario Neurotrauma Concussion Guidelines, 2018

Concussion Guidelines

- Prolonged rest/avoidance of activities may worsen outcomes

- Early return to sport (within 7 days) associated with reduced post concussive symptoms

- Avoid activities with high risk of concussion/mTBI

Ontario Neurotrauma Concussion Guidelines, 2018

Return to Sport

Table 1 Graduated return-to-sport (RTS) strategy

Stage	Aim	Activity	Goal of each step
1	Symptom-limited activity	Daily activities that do not provoke symptoms	Gradual reintroduction of work/school activities
2	Light aerobic exercise	Walking or stationary cycling at slow to medium pace. No resistance training	Increase heart rate
3	Sport-specific exercise	Running or skating drills. No head impact activities	Add movement
4	Non-contact training drills	Harder training drills, eg, passing drills. May start progressive resistance training	Exercise, coordination and increased thinking
5	Full contact practice	Following medical clearance, participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6	Return to sport	Normal game play	

NOTE: An initial period of 24–48 hours of both relative physical rest and cognitive rest is recommended before beginning the RTS progression.
There should be at least 24 hours (or longer) for each step of the progression. If any symptoms worsen during exercise, the athlete should go back to the previous step.
Resistance training should be added only in the later stages (stage 3 or 4 at the earliest). If symptoms are persistent (eg, more than 10–14 days in adults or more than 1 month in children), the athlete should be referred to a healthcare professional who is an expert in the management of concussion.

Consensus Statement on Concussion in Sport (McCrory et al., 2018)

Return to School
Do this first

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

Consensus Statement on Concussion in Sport (McCrory et al., 2018)

So, what to recommend?

- Max 24-48 hours brain rest
- Then, gradual return to activities as tolerated
- Note you do not have to be asymptomatic to progress in activity

Planning Return to Work

Table 12.2 Stepwise Approach to Return-to-work (RTW) Planning for Patients with concussion/mTBI

Healthcare Professional	1. Identify medical restrictions (risk) 2. Identify limitations (functional capacity: physical, cognitive, emotional) 3. Identify and document symptom triggers
Employer	4. Review information on restrictions, limitations and symptom triggers 5. Review information on job demands 6. Identify opportunities for accommodations/work modification
Employer and Worker	7. Formulate progressive RTW plan

- See algorithms 12.1 and 12.2 in Concussion Guidelines for addressing return to work/school

Ontario Neurotrauma Concussion Guidelines, 2018

Driving?

- No driving x at least 24h post concussion if seeing them acutely

- Significantly slower to respond to traffic hazards than patients with minor orthopaedic injuries (Preece et al., 2010)

Summary:
Assessment and Management

- Careful history and physical
- CT head prn following Canadian CT head rules
- Brief cognitive and physical rest
- Gradual, early return to activity
- *****Counsel patients re what to expect*****

How long does it take for MOST people to recover?

Hours-days

Days-weeks

Weeks-months

Months-years

Doc, how long will my symptoms last?

- Typically seen within as early as a few days up to 1 to 3 months post-injury.[b]

Ontario Neurotrauma Concussion Guidelines, 2018

Expectation Management

- Education important!
- Counsel patients that transient increase in symptoms common with increased activity -> adjust activity prn

Role of Educating Patients in Recovery

- “Advise patients about the common self-resolving symptoms they may experience, and that mild symptom exacerbation is common, transient, and will not prolong recovery. Provide strategies for coping with (tolerating) specific symptoms and exacerbations, teach cognitive-behavioural strategies for attenuating anxiety, and address sleep hygiene. Avoidance of symptoms is not the goal in the short-term. Patients with residual symptoms should aim to gradually increase their participation in valued daily activities. Educating patients about this approach may expedite recovery by reducing or preventing reactive anxiety and depression, and by improving adherence to the established return to activity plan”

Howard et al., 2018

Approach to Treatment

- Acute: (0-4 weeks): Emphasis should be placed on facilitation of recovery including education, reassurance, subsymptom threshold training and non-pharmacological interventions.

- Post-Acute: (4-12 weeks): If patient not improving or symptoms worsening, then referral to an interdisciplinary clinic should be made. Focus should be placed on managing symptoms of sleep impairment, headache, mood, fatigue and memory/attention. The focus is on a graduated return to activity which may include work and school.

- Persistent: (3 mo. +): If symptoms persist for more than 3 months, patients require an interdisciplinary team for symptom management using an individualized management approach with focus on returning to pre-injury activities.

Ontario Neurotrauma Concussion Guidelines, 2018

For a diagnosis of post concussion syndrome, symptoms last:

Longer than 48h

Longer than 1 week

Longer than 1 month

Longer than 3 months

What percentage of patients have persistent symptoms?

Post-concussion syndrome

- Symptoms persisting beyond the typical recovery period of three months
- Persistent symptoms: A variety of physical, cognitive, emotional and behavioural symptoms that may endure for weeks or months following a concussion

Ontario Neurotrauma Concussion Guidelines, 2018

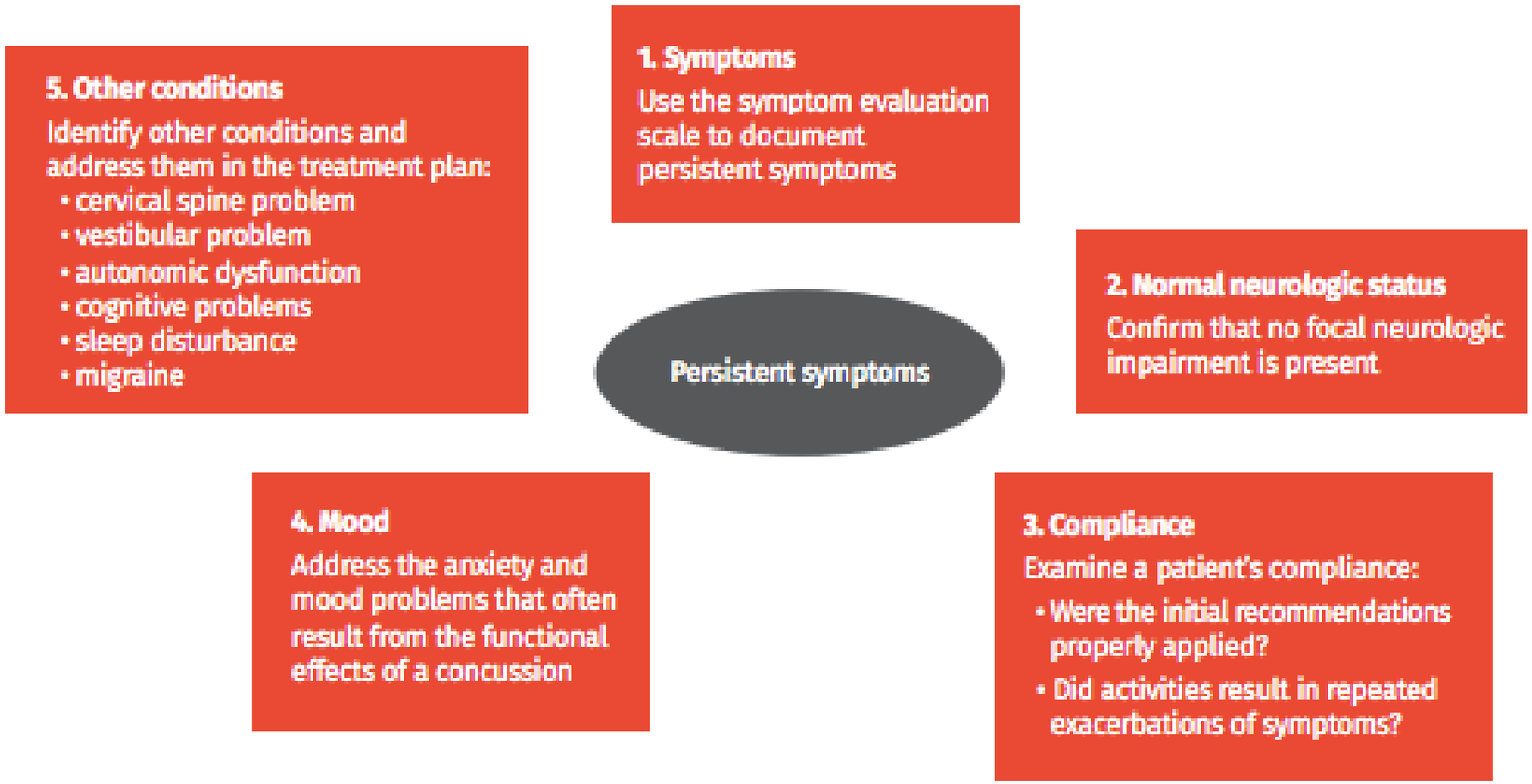
Table 1.1. Risk Factors Influencing Recovery Post mTBI

<u>Medical Factors:</u> **Pre-existing/ concurrent medical conditions or post-injury symptoms that are associated with poor outcomes post mTBI**	• History of previous traumatic brain injury • History of previous physical limitations • History of previous neurological or psychiatric problems • Skull fracture • Early onset of pain and in particular headache within 24 hours after injury • Confounding effects of other health-related issues, e.g., pain medications, disabling effects of associated injuries, emotional distress • Anxiety • High number of symptoms reported early after injury i.e., high score on the Rivermead or Post Concussion Symptom Questionnaire - Vestibular/vestibular-ocular abnormalities - Pre-injury sleep disturbance or post-injury changes - Reduced balance or dizziness - Nausea after injury - Memory problems after injury - Post-traumatic amnesia (PTA)
<u>Contextual Factors:</u> **Personal, psychosocial, or environmental factors that may negatively influence recovery post mTBI**	• Injury sustained in a motor vehicle accident • Potential influence of secondary gain issues related to litigation and compensation • Not returning to work or significant delays in returning to work following the injury • Being a student • Presence of life stressors at the time of the injury • Higher levels of symptom reporting is associated with mood symptoms and heightened self-awareness of deficits • Older age • Lack of social supports • Lower education/low social economic status • Female gender • Lower Resiliance • Returning to a contact/ risk of contact sport activity

Adapted from the Motor Accidents Authority of NSW, Guidelines for Mild Traumatic Brain Injury following a Closed Head Injury (MAA NSW, 2008)

Persistent Symptoms

Figure 1. Factors to consider when assessing a patient's persistent symptoms



Data from McCrory et al[2] and the Ontario Neurotrauma Foundation.[4]

Fremont, 2019

Consider other diagnoses

Table 4.1. Differential Diagnoses Related to Concussion/mTBI

Major depressive disorder
Generalized anxiety disorder
Post-traumatic stress disorder (PTSD)
Chronic pain syndrome
Cervical strain/whiplash associated disorder
Substance abuse or polypharmacy
Somatic symptom disorder
Factitious disorder
Malingering
Post-traumatic headache
Post-traumatic dizziness
Fibromyalgia syndrome (secondary)
Primary sleep disorder: e.g., obstructive sleep apnea

Ontario Neurotrauma Concussion Guidelines, 2018

Symptom Management

Medications and interventions	Sunglasses can be used for photophobia, and earplugs or noise-canceling headphones can be used for phonophobia; medications can be used to alleviate other specific symptoms (e.g., nonsteroidal anti-inflammatory drugs or amitriptyline for headaches, sleep aids, anxiolytics). No pharmacologic therapies are available specifically for concussion; therefore, medications for symptom management should be used as in patients without concussion. Avoid acute use of nonsteroidal anti-inflammatory drugs if there is potential for intracranial bleeding. When making return-to-activity decisions, be aware that medications may mask postconcussive symptoms.

Adapted from Scorza KA, Raleigh MF, O'Connor FG. Current concepts in concussion: evaluation and management. Am Fam Physician. 2012;85(2):130

Other therapies for specific symptoms

- Headaches - Massage therapy, relaxation therapy, biofeedback, pharmacologic therapy targeted at nature of headache (tension vs. migraine)
- Sleep wake disturbances - sleep hygiene, CBT
- Fatigue - MSBR, exercise, blue light therapy, methylphenidate
- Anxiety/depression - CBT, MBSR likely also helpful for this, SSRIs/SNRIs suggested for anxiety/depression symptoms

Ontario Neurotrauma Concussion Guideline, 2018

Local Resources

- KOPI
- Community Brain Injury Services: https://www.providencecare.ca/community-services/community-brain-injury-services/

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Thank you!

A useful approach

- Diagnosis. Primary care physicians should consider a differential diagnosis of the sequelae of head and neck trauma (especially in the absence of definite loss of consciousness). Neck pain, headaches, and psychiatric symptoms (e.g. anxiety, depression, pain, and sleep disturbance) require prompt behavioural and pharmacological intervention.

- Education. Advise patients about the common self-resolving symptoms they may experience, and that mild symptom exacerbation is common, transient, and will not prolong recovery. Provide strategies for coping with (tolerating) specific symptoms and exacerbations, teach cognitive-behavioural strategies for attenuating anxiety, and address sleep hygiene. Avoidance of symptoms is not the goal in the short-term. Patients with residual symptoms should aim to gradually increase their participation in valued daily activities. Educating patients about this approach may expedite recovery by reducing or preventing reactive anxiety and depression, and by improving adherence to the established return to activity plan.

- Define rest, and establish a timeline. Vigorous physical activity should be avoided if a patient is experiencing intense acute symptoms but not for more than 48 hours. In the Emergency Department or at an acute clinic visit, individualize a reduction in intensity and frequency of daily activities (physical and cognitive) for a specific amount of time with immediate recommendations to slowly increase exposure/functioning (at the patient's pace), so that an overwhelming symptom burden is not experienced. Complete rest (or symptom avoidance) for an indefinite amount of time, regardless of symptomatology, should be avoided.

- Negotiate a return to activity plan. Youth should have reintegrated into school before returning to sports. Counsel patients to return to activity in a progressive manner, in such a way that limits a significant exacerbation in symptoms (although some emergent symptoms with increases in functioning and activity should be expected). Those patients who have residual symptoms and are activity intolerant (or phobic) may require a detailed collaborative step-wise plan. Athletes should not resume activities with significant risk of re-injury (e.g. full contact practice) until all symptoms have resolved and they have been cleared by a medical professional.

- Monitor response and adherence to plan. Schedule regular follow-up during the key transition points in the return to activity plan. Assertively treat psychiatric symptoms. Counsel patients to stick to the plan and to maintain proper pacing through their recovery. Patients who do not attempt to return to activity should be evaluated for depression, anxiety, and vestibular dysfunction by specialists as soon as possible.