

# Save the Brain Montana



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**Paul Coats, NP**  
**Neurology**



Paul Coats was born into a military family, traveled the world and graduated with honors from Stuttgart American High School in what was then West Germany. Upon his return to the USA, he attended Marymount College of Virginia and earned an associate's degree in nursing. From there we went to Metropolitan State College of Denver and earned a bachelor's degree in nursing and holistic care and completed certification as a family nurse practitioner.

He moved to Montana, and in 2001, he joined Glacier Neurological Associates where he was in practice for seven years. In 2009 he joined Kalispell Regional Healthcare and established the Integrated Spine Program. He also served as a hospitalist nurse practitioner and covered the Inpatient Rehab Unit. In 2012 Paul returned to the neurology department of Neuroscience and Spine Institute as a nurse practitioner in neurology.

Paul has particular interest in brain injury, headache, and behavioral health. He is passionate about educating people and building programs and systems to improve access, quality, outcomes when it comes to all aspects of health and wellness. He has twice been selected as the Montana Nurse Practitioner of the year by the American Academy of Nurse Practitioners. He loves his wife Patricia and children Bjorn, Isla and Stellan. He is an avid hiker, skier, gardener, and do-it-yourself handyman.

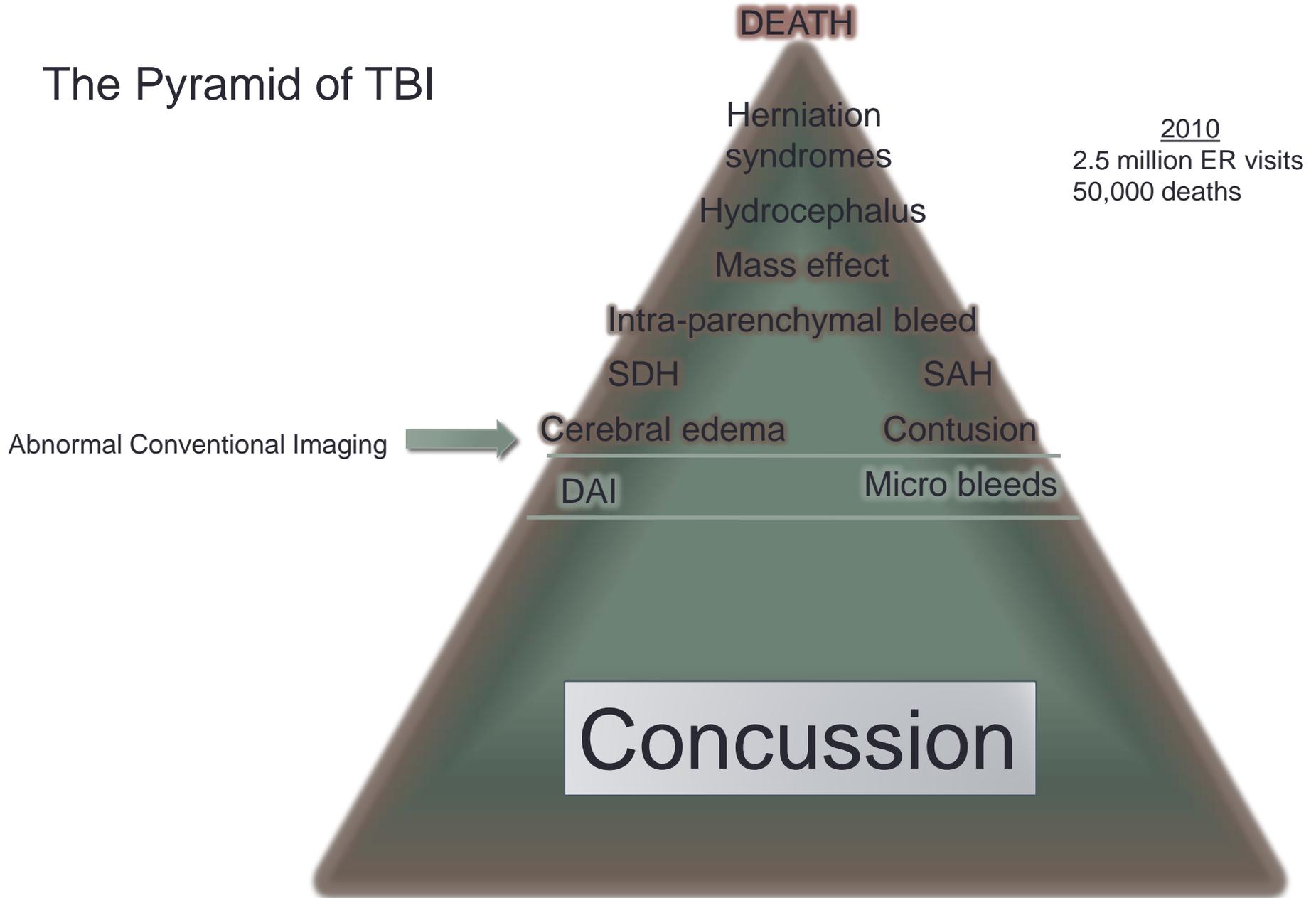


## Neuroscience & Spine Institute

A DEPARTMENT OF KALISPELL REGIONAL MEDICAL CENTER

**KALISPELL REGIONAL HEALTHCARE**

# The Pyramid of TBI



# Concussions

## Mild Traumatic Brain Injury

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MEDICAL MEDIA

# Concussion Symptoms

## Physical

- Headache
- Ringing in ears
- Blurry Vision
- Nausea
- Neck Pain
- Off Balance
- Dizzy



## Emotional

- Sadness
- Anxiety
- Nervousness
- Personality Changes
- Depression



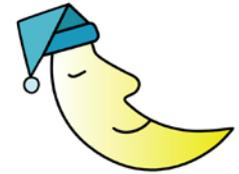
## Cognitive

- Confusion
- Feeling Slowed Down
- Memory Loss
- Difficulty Thinking Clearly
- Slowed Speech



## Sleep

- Feeling Exhausted
- Trouble Falling Asleep
- Drowsiness
- Sleeping less than Usual
- Excess Sleep



# Sports Concussion Stats

- 47% of all reported sports concussions occur during high school football
- 1 in 5 high school athletes will sustain a sports concussion during the season
- 33% of high school athletes who have a sports concussion report two or more in the same year
- 4 to 5 million concussions occur annually, with rising numbers among middle school athletes
- 90% of most diagnosed concussions do not involve a loss of consciousness

# Sports Concussion

Incidence per 100,000 athletic exposures

- Football: 64 -76.8
- Boys' ice hockey: 54
- Girl's soccer: 33
- Boys' lacrosse: 40 - 46.6
- Girls' lacrosse: 31 - 35
- Boys' soccer: 19 - 19.2
- Boys' wrestling: 22 - 23.9
- Girls' basketball: 18.6 - 21
- Girls' softball: 16 - 16.3
- Boys' basketball: 16 - 21.2
- Girls' field hockey: 22 - 24.9
- Cheerleading: 11.5 to 14
- Girls' volleyball: 6 - 8.6
- Boys' baseball: Between 4.6 - 5
- Girls' gymnastics: 7

# Concussion Consequences

Short term:



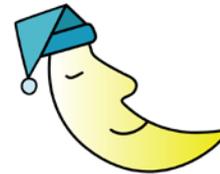
Headache  
Balance problems  
Vision problems  
Tinnitus



Learning difficulty  
Memory issues  
Poor judgment  
Poor focus



Depression  
Irritability  
Anxiety



Insomnia  
Hypersomnia  
Fatigue

Long term:

Dementia  
Parkinsonism  
Depression  
Increased Suicide Risk

School issues  
Relationship issues  
Work issues  
Criminal issues



**Why ?**

**Wellness**

**More Activity**

**More Sports**

**More Injuries**

**Concussions are Common**

**Neuroscience**

**Confusion**

**Stories**

**Media**

**Politics**

**Law**

**Liability**

**Cost**

**It's the Right Thing to do**

# Official Confusion



# Aristotle's modes of Persuasion

- ❖ Ethos: Credibility or ethical appeal. Legit experts.
- ❖ Logos: Logic. Clear, effective, evidence-based.
- ❖ Pathos: Emotions. Relevant. Stories.

# Consensus Statements

- Pre-participation baseline testing
- Sideline evaluation
- Post concussion evaluation
- Return to play protocol
- Return to Learning



# What is Save the Brain?

Cohesive and coherent sports concussion evaluation and treatment system for Montana.



# Educational Effort



Athletes

Doctors

Midlevel  
Providers



Physical  
Therapists

Chiropractors

School  
Nurses



Community  
Leaders



Parents

Coaches &  
Athletic  
Trainers

Educators





# Save the Brain Campaign

- Education, Tools, Training, Support, Tracking
- Better concussion management

# Education: Talks/Presentations

## Community

Sports Organizations (multiple), Service Groups, Parent groups, EMS, Coaches, Police, Firefighters

## Schools

Kids in High School, Middle, Elementary levels.  
Superintendants, Principals, Teachers, Athletic Directors, Playground staff

## Clinicians

Doctors, Chiropractors, Physical Therapists, PA's, NP's,  
School Nurses, Athletic Trainers

# Tools

Concussion Recognition Cards

Clinical assessment tools

SCAT 3

Child SCAT 3

Concussion notices

Concussion Information

Return to Play protocol and clearance forms

Return to learning protocol

School recommendations form

## Save the Brain Website

# Training

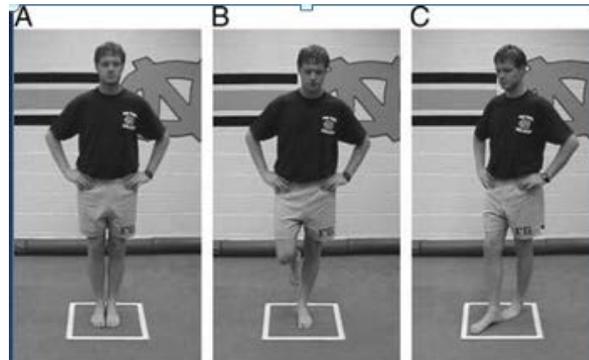
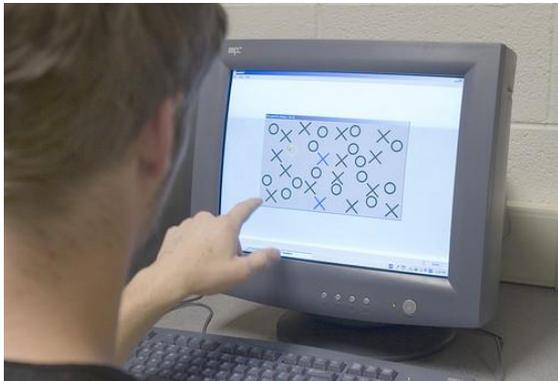
Over 150 clinicians

Eureka, Whitefish, Kalispell, Lakeside, Bigfork, Columbia Falls, Missoula, Helena.

Doctors, NP's, PA's, DC's, PT's, OT's, SLP's, CAT's, EMT's/Paramedics, RN's

# Pre-Participation Baseline Testing

- Cognitive Functioning
  - SCAT
  - ImPact
- Balance & Coordination
  - SCAT
  - Biodex



# Sideline Concussion Recognition

**SIDELINE CONCUSSION RECOGNITION**



**For any injury, remember:**  
Apply basic first aid (Airway, Breathing, Circulation)  
Do not move the athlete (other than to open the airway) unless trained to do so.

**RED FLAGS**  
If any of the following are present the athlete should immediately and safely be removed from the field by a qualified medical professional or emergency personnel and brought to the nearest Emergency Medical Facility for urgent assessment.

- Witnessed loss of consciousness
- Athlete complains of neck pain
- Increasing confusion or irritability
- Repeated vomiting
- Seizure or convulsion
- Weakness or tingling/burning in arms or legs
- Deteriorating consciousness
- Severe or increasing headache
- Unusual behavior change
- Double Vision

**Suspect concussion and REMOVE** from play if any **ONE** or more of the following is present:

**• Visible clues**

- Loss of consciousness or responsiveness
- Lying motionless on the ground/Slow to get up
- Unsteady on feet/balance problems/falling/incoordination
- Grabbing/clutching of head
- Dazed/blank or vacant stare
- Confused/not aware of plays or events

**• Signs or symptoms**

- Loss of consciousness
- Seizure or convulsion
- Balance problems
- Nausea or vomiting
- Drowsiness
- Increased emotionality
- Irritability
- Sadness
- Fatigue or low energy
- Nervousness or anxiousness
- "Don't feel right"
- Difficulty with memory
- Headache
- Dizziness
- Confusion
- Feeling slowed down
- "Pressure in head"
- Blurred vision
- Sensitivity to light
- Amnesia
- "In a fog"
- Neck pain
- Sensitivity to noise
- Difficulty with concentration

**• Memory function**

Ask the following questions. Failure to correctly answer any of these correctly should result in immediate removal from play.

"Where are we now?"

"Which half/period is it now?"

"Who scored last in this game?"

"What team did you play before this game?"

"Did your team win the last game?"

Any athlete with a suspected concussion should be immediately removed from play and not allowed to return until they have been assessed by a qualified medical provider. They should not be left alone or allowed to drive a vehicle.

adapted from McCrory et al, Consensus Statement on Concussion in Sport. Br J Sports Med 47(5), 2013

Anyone can do it!

**When in Doubt, Take Them OUT**

# Post Concussion Evaluation

- Trained licensed healthcare professional does the first and last evaluation
- Supervises non-licensed "Monitor"



## SCAT3™

Sport Concussion Assessment Tool – 3rd Edition

For use by medical professionals only

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Name: \_\_\_\_\_
Date/Time of Injury  
Date of Assessment: \_\_\_\_\_
Examiner: \_\_\_\_\_

---

**What is the SCAT3?**

The SCAT3 is a standardized tool for evaluating injured athletes for concussion and can be used in athletes aged from 13 years and older. It supersedes the original SCAT and the SCAT2 published in 2009 and 2006, respectively. For younger persons, ages 12 and under, please use the Child SCAT3. The SCAT3 is designed for use by medical professionals. If you are not qualified, please use the Sport Concussion Recognition Tool. Preseason baseline testing with the SCAT3 can be helpful for interpreting post-injury test scores.

Specific instructions for use of the SCAT3 are provided on page 3. If you are not familiar with the SCAT3, please read through these instructions carefully. This tool may be freely copied in its current form for distribution to individuals, teams, groups and organizations. Any revision or any reproduction in a digital form requires approval by the Concussion in Sport Group.

**NOTE:** The diagnosis of a concussion is a clinical judgment, ideally made by a medical professional. The SCAT3 should not be used solely to make, or exclude, the diagnosis of concussion or the absence of clinical judgement. An athlete may have a concussion even if their SCAT3 is "normal".

**What is a concussion?**

A concussion is a disturbance in brain function caused by a direct or indirect force to the head. It results in a variety of non-specific signs and/or symptoms (some examples listed below) and most often does not involve loss of consciousness. Concussions should be suspected in the presence of **any one or more** of the following:

- Symptoms (e.g., headache) or
- Physical signs (e.g., unsteadiness), or
- Impaired brain function (e.g., confusion) or
- Abnormal behaviour (e.g., change in personality).

**SIDELINE ASSESSMENT**

**Indications for Emergency Management**

**NOTE:** A hit to the head can sometimes be associated with a more serious brain injury. Any of the following warrants consideration of activating emergency procedures and urgent transportation to the nearest hospital:

- Glasgow Coma score less than 15
- Deteriorating mental status
- Potential spinal injury
- Progressive, worsening symptoms or new neurologic signs

**Potential signs of concussion?**

If any of the following signs are observed after a direct or indirect blow to the head, the athlete should stop participation, be evaluated by a medical professional and **should not be permitted to return to sport the same day** if a concussion is suspected.

Any loss of consciousness?  Y  N

"If so, how long?" \_\_\_\_\_

Balance or motor coordination changes, slow/abnormal movements, etc.?  Y  N

Disorientation or confusion (ability to respond appropriately to questions)?  Y  N

Loss of memory?  Y  N

"If so, how long?" \_\_\_\_\_

"Before or after the injury?" \_\_\_\_\_

Blank or vacant look?  Y  N

Visible facial injury in combination with any of the above?  Y  N

**1 Glasgow coma scale (GCS)**

**Best eye response (E)**

No eye opening	1
Eye opening in response to pain	2
Eye opening to speech	3
Eye opening spontaneously	4

**Best verbal response (V)**

No verbal response	1
Incomprehensible sounds	2
Inappropriate words	3
Confused	4
Oriented	5

**Best motor response (M)**

No motor response	1
Extension to pain	2
Abnormal flexion to pain	3
Flexion/Withdrawal to pain	4
Localizes to pain	5
Obeys commands	6

**Glasgow Coma score (E + V + M)**

_____	/15
-------	-----

GCS should be recorded for all athletes in case of subsequent deterioration.

**2 Maddocks Score\***

\*I am going to ask you a few questions, please listen carefully and give your best effort! (Marked/Unmarked in games? (7 points for each correct answer))

What venue are we at today?	0	1
Which half is it now?	0	1
Who scored last in this match?	0	1
What team did you play last week/game?	0	1
Did your team win the last game?	0	1

**Maddocks score**

_____	/5
-------	----

Maddocks score is utilized to define diagnosis of concussion only and is not used for serial testing.

**\*Notes: Mechanism of injury (let me what happened?)**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SCAT3 SPORT CONCUSSION ASSESSMENT TOOL, 3, PAGE 1

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# Return to Play Protocol



Return to Play Protocol  
following Concussion

Athlete's Name \_\_\_\_\_ Licensed Healthcare Provider \_\_\_\_\_

Date of concussion \_\_\_\_\_ Concussion Monitor/Tester \_\_\_\_\_

The key to recovery from a concussion is 24-72 hours of rest followed by a gradual increase in brain and body activity, but only if the increased activity does not make symptoms come back.

To advance to the next stage of recovery the concussed person needs to be symptom-free (**normal**) without any **new medications** for headache, pain or sleep.

For children 12 and under	Minimum of 72 hours before advancing to the next stage.
For people 13 and older	Minimum of 24 hours before advancing to the next stage.

If symptoms return after advancing to the next stage, the athlete should go back one stage and follow the activity level for that stage. If symptoms are getting worse or not going away, see your licensed healthcare provider.

Stage	Activity	Monitor
1. Rest and Recovery	No exercise. No thinking. No work or school. No media.	Date cleared: _____ By: _____
2. Light aerobic exercise	Walking, stationary bike, or elliptical. Pulse < 70-80% of max. No lifting.	Date cleared: _____ By: _____
3. Moderate aerobic exercise and drills	Non-contact drills at reduced speed. Light lifting.	Date cleared: _____ By: _____
4. Non-contact training drills	Full speed non-contact drills. Full aerobic exercise. Heavier lifting.	Date cleared: _____ By: _____
5. Full-contact training	Full participation in practice. Full contact. Full exercise. Full lifting.	Date cleared: _____ By: _____
6. Full Return to Play	Game ready!	See backside of this sheet.

- Brain and body rest  
Gradually build back up

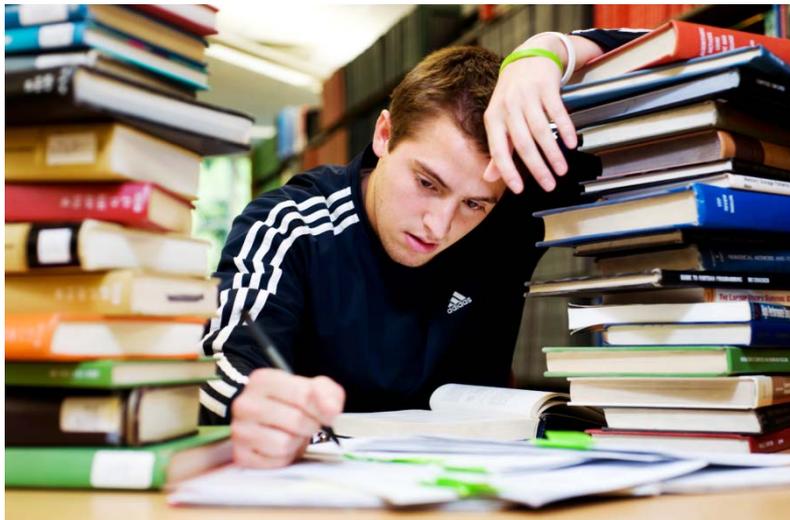
- 72 hours between steps for kids < 13 years old

- 24 hours between steps for people > 13 years old



# School Recommendations

- Hard brain work slows down recovery
- Thinking is brain work
- Stimulation is brain work



## School recommendations following concussion

Patient Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_  
 Date of Injury: \_\_\_\_\_ Referred by: \_\_\_\_\_  
 Duration of Recommendations: 1 week 2 weeks 4 weeks Until further notice

The patient will be reassessed for revision of these recommendations in \_\_\_\_\_ weeks.  
 This patient has been diagnosed with a concussion (a brain injury) and is currently under our care. Please excuse the patient from school today due to the medical appointment. Flexibility and additional supports are needed during recovery. The following are suggestions for academic adjustments to be individualized for the student as deemed appropriate in the school setting. Feel free to apply/remove adjustments as needed as the student's symptoms improve/worsen.

### Attendance

- \_\_\_\_\_ No school for \_\_\_\_\_ school day(s)
- \_\_\_\_\_ Attendance at school \_\_\_\_\_ days per week
- \_\_\_\_\_ Full school days as tolerated by the student
- \_\_\_\_\_ Partial days as tolerated by the student

### Visual Stimulus

- \_\_\_\_\_ Allow student to wear sunglasses/hat in school
- \_\_\_\_\_ Pre-printed notes for class material or note taker
- \_\_\_\_\_ Limited computer, TV screen, bright screen use
- \_\_\_\_\_ Reduce brightness on monitors/screens
- \_\_\_\_\_ Change classroom seating as necessary

### Workload/Multi-Tasking

- \_\_\_\_\_ Reduce overall amount of make-up work, class work and homework
- \_\_\_\_\_ Prorate workload when possible
- \_\_\_\_\_ Reduce amount of homework given each night

### Physical Exertion

- \_\_\_\_\_ No physical exertion/athletics/gym/recess
- \_\_\_\_\_ Walking in gym class only
- \_\_\_\_\_ Begin return to play protocol as outlined by return to activity form

### Current Symptoms List (the student is noting these today)

- \_\_\_\_\_ Headache
- \_\_\_\_\_ Nausea
- \_\_\_\_\_ Dizziness
- \_\_\_\_\_ Visual problems
- \_\_\_\_\_ Balance problems
- \_\_\_\_\_ Sensitivity to light
- \_\_\_\_\_ Student is reporting most difficulty with/in
- \_\_\_\_\_ All subjects
- \_\_\_\_\_ Science
- \_\_\_\_\_ Focusing
- \_\_\_\_\_ Reading/Language arts
- \_\_\_\_\_ Music
- \_\_\_\_\_ Listening

### Breaks

- \_\_\_\_\_ Allow the student to go to the nurse's office if symptoms increase
- \_\_\_\_\_ Allow student to go home if symptoms do not subside
- \_\_\_\_\_ Allow other breaks during school day as deemed necessary and appropriate by school personnel

### Audible Stimulus

- \_\_\_\_\_ Lunch in a quiet place with a friend
- \_\_\_\_\_ Avoid music or shop classes
- \_\_\_\_\_ Allow to wear earplugs as needed
- \_\_\_\_\_ Allow class transitions before bell

### Testing

- \_\_\_\_\_ Additional time to complete tests
- \_\_\_\_\_ No more than one test a day
- \_\_\_\_\_ No standardized testing until \_\_\_\_\_
- \_\_\_\_\_ Allow for scribe, oral response, and oral delivery of questions, if available

### Additional Recommendations

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Provider information

\_\_\_\_\_  
 \_\_\_\_\_  
 Office \_\_\_\_\_ Fax \_\_\_\_\_

I, \_\_\_\_\_, give permission for \_\_\_\_\_ to share the following information with my child's school and for communication to occur between the school and \_\_\_\_\_ for changes to this plan.

Parent Signature

Date

# Save the Brain Campaign Goals

- **2014:** Unite healthcare providers. Awareness.
- **2015:** Baseline testing during sports physical. Education Realm. Expand outside of Flathead. Refine.
- **2016:** Prevention. Continue to expand and refine.



# Opportunity

- Dylan Steiger's Act
- High Public Interest
- Committed Titans and Champions
- Tools that work
- Processes that work
- Technology and media mechanisms
- Montana- where everybody knows your name

# Challenges

- Geography
- Variable levels of resources in communities
- Multiple demographics
- Administrative resources
- Costs and funding

# Proposal

- Collaborative partnership: Private, Public and Non-profit
  - Save the Brain
    - Titans
    - Tools
    - Trainings
  - Governor's Traumatic Brain Advisory Council
    - Funding for trainings and materials
    - Priority determination
  - Brain Injury Alliance of Montana
    - Administrative support
    - Website design and maintenance
  - University of Montana
    - Research

# Outcome

- Cohesive, coherent concussion prevention, assessment, and management strategy for Montana featuring:
- Guidelines with mechanisms to improve as the science evolves
- Flexible, community resource-based implementation
- Improved public awareness
- Improved clinician training
- Statewide Website
- Concussion registry
- Saved Brains

# Save the Brain Campaign

**THANK  
YOU!**

