Concussion Repercussions: What You Need To Know
While every precaution has been taken in preparing this manual, Academy School District 20 (ASD20) and the ASD20 Brain Injury Team (BIT) assume no responsibility for errors, omissions or damages resulting in the use of this information. The information in this manual is not a substitute for medical advice. Consult your own health care provider if you have any specific medical questions.

The purpose of this manual is not to make you an expert in brain injury, but provide you with enough information to help increase students knowledge of concussion prevention and management. The material in this training manual and the accompanying PowerPoints directly address Colorado State Health and Physical Education Standard 4 relating to prevention and risk management. The goals are to empower our youth to take active preventative steps to avoid concussions, to recognize signs and symptoms of concussions, and to increase compliance with concussion management guidelines.

For more information please refer to:

The Colorado Department of Education, Concussion Management Guidelines  
http://www.cde.state.co.us/healthandwellness/concussionguidelines11-6-14

Rocky Mountain Youth Sports, Concussion Center. The REAP Project.  

Get Schooled on Concussion Website.  
http://www.getschooledonconcussions.com/

Colorado Kids Brain Injury Resource Network  
http://cokidswithbraininjury.com/

The Centers for Disease Control and Prevention (CDC) Heads Up to Schools program.  
http://www.cdc.gov/concussion/HeadsUp/schools.html

An attempt has been made to gain permission for all material provided in this training. Permission has been granted by authors and copyright holders for all of the You Tube videos used. Additionally, images of athletes are shared following copyright laws.
Acknowledgements

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Colorado Brain Injury Trust Fund for funding the grant used to create this project. Also to the Brain Injury Professional Network of Colorado Springs for allowing us to use their “Concussion 101” PowerPoint as a resource for this manual.

Other agencies that provided invaluable content include the Brain Injury Alliance of Colorado, Centers for Disease Control and Prevention and MomsTeam.com

We are grateful to our school administrators for their support and permission in allowing the team members the time to work together to create this product. Special thanks to Pat Richardson for her legal counsel and advice, and Clark Maxon and his staff from the ASD20 Curriculum and Instruction Department for their feedback.

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We are grateful to Wikipedia for permitting the use of images of Junior Seau, Chris Henry, Bob Probert and Ryan Freel, as these images are licensed under the Creative Commons Attribution-Share Alike 3.0 Unported license.

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Trainers Association for permission to use the video, “What is a Concussion”, with the tag line of, “If in doubt, sit it out”. Gttps://vimeo.com/6089854.

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Instructor Guidelines

Introduction:

The “Concussion Repercussions: What You Need to Know” curriculum was developed by the Academy School District 20 Brain Injury Team with support through an educational grant from the Colorado Traumatic Brain Injury Trust Fund. The Academy School District 20 Brain Injury Team is a multidisciplinary team that comes together as one unit to serve our educational community, students and families affected by brain injury.

The Brain Injury Team (BI) demonstrates respect for all professionals and has an open invitation to all professional disciplines, including nurses, teachers, school psychologists, school social workers, motor team, speech language pathologists, and administrators. Our team is comprised of volunteers, who donate their time towards the education and support of all members of our community who have sustained a brain injury.

This “Concussion Repercussions: What You Need to Know” curriculum has grown out of many conversations, trainings and presentations with school personnel, families and students with concussion. Along with professionals in our community who work in the field, we recognize that our culture around concussions needs to change. We know a lot more about the impact of concussion now and recognize that they are not ‘just a ding to the head’ or ‘having your bell rung’. We know that concussions resolve quickly and without too much impact to our lives as long as they are recognized and treated correctly. However, we also know that concussion symptoms can be exacerbated when an individual does not know the best way to treat their concussion. The worst case scenario is students who do not rest and treat their concussions, who return to physical activity and sustain a second concussion. In rare cases this can result in long-term disability or even death. The National Media have covered many of these stories in recent years. The ASD20 BIT feel prevention of concussion is the ideal. However, if a concussion is sustained students need to know the best way to treat their concussion while it is fully healing.

This curriculum is designed to educate students about the signs and symptoms of a concussion, and the long term risks of not treating a concussion correctly. This is done in an effort to raise awareness around prevention and increase compliance with school based concussion management programs. The curriculum is also designed to encourage team mates to look out for each other and support each other in the event of a concussion. The curriculum was designed with 6th and 9th grade students in mind. However, it could be used with any secondary grade level from middle to high school.
Colorado Health and Physical Education Standard 4

For school personnel, the “Concussion Repercussions: What you Need to Know”, curriculum directly addresses the Colorado Health and Physical Education Standard 4 – Prevention and Risk Management. Using this curriculum will help your students understand the risks and safety factors that may affect participation in physical activity. Students will also increase their knowledge of concussion. This in turn should increase compliance with response procedures such as “return to learn” and “return to play” protocols. By using the pre and post survey included in the curriculum students will be able to demonstrate their new knowledge of safety and response in relation to concussion.

Things to consider as an instructor.

Discussion about any health related topic can have unexpected consequences. Discussions about concussion and brain injury are no different. Instructors may want to familiarize themselves with the students in their class who have sustained a concussion/brain injury in the past or who are currently suffering from concussion symptoms, or who may be sensitive to this topic for other reasons. It would be best practice to check in with these students before the presentation to let them know what will be covered and answer any questions they may have. It would also be prudent to check in with them again at the end of class to address any concerns or misconceptions. If concerns are noted consulting with your mental health provider or school counselor may be advisable.

To support effective learning, this training package has included visual, and auditory presentation of information as well as hands on activities. Videos are utilized throughout the presentation to reinforce concepts. Some videos are cartoons, and others are documentaries. Repetition of important information is presented throughout to support learning and memory.

The training can be presented in one sitting, this will take 15 minutes and 25 seconds without the videos or activities, and 34 minutes with the videos. However the preferred method is to break the training into three parts.

Using the pre and post test

Before beginning chapter number 1 give each student a copy of the pre-test. At the end of chapter 3 have the students complete the post-test. This data can be used as evidence of student’s learning and knowledge of the topic as well as the effectiveness of the curriculum.
How to use the “Concussion Repercussions: What You Need to Know” curriculum.

The curriculum is comprised of three chapters. Each chapter has an associated PowerPoint presentation utilizing a voice-over feature. The PowerPoints can be accessed by going to the ASD20 website http://www.asd20.org/Info/ClubsAndAthletics/braininjury/Pages/default.aspx

The voice-over PowerPoints utilize several male and a female voice. This was done to encourage auditory attention to the material.

Chapter 1 “Concussion signs and symptoms” is 4 minutes 45 seconds without the videos and 6 minutes 30 seconds with the videos.

Chapter 2 “You’ve got a concussion, so what?” is 8 minutes and 2 seconds without the videos and 12 minutes with the videos.

Chapter 3 “Ways to help your teammates” is 2 minutes 38 seconds without the video and 15 minutes 25 seconds with the video.

As mentioned previously, the recommended method of presentation is to break the training into three parts, utilize the videos included, and extend learning with additional activities.

Each chapter has additional activities available. These can be found at the end of each corresponding chapter in this training manual. Activities are included for several reasons.

1. To allow flexibility for the instructor. Playing the PowerPoint will present all the relevant material to the students. However, if you would like to spend a little more time on this topic, the activities can be utilized.
2. To improve retention of material. The activities can be incorporated to encourage students to think more deeply about the subject matter.
3. To encourage students to discuss this issue with each other. By opening up a conversation about this subject the hope is that students will feel more comfortable reporting symptoms and consequently responding appropriately to concussions.

Each chapter of this training manual has an exact copy of the PowerPoint slides and voice-over script. Any additional information for you as the Instructor will be highlighted with the word “Instructor:” before it.

Additional activities are highlights in the text in the following way -

**Instructor:** additional activity available: See Chapter 2: Activity 6.
This activity is a short crossword puzzle. Students are required to use their new knowledge to complete this puzzle.

A final note:

The “Concussion Repercussion: What You Need to Know” curriculum and all of the materials in it are available for schools to print, use and distribute for the purpose of education. The Academy School District 20 Brain Injury Team asks that you give credit to our team.
Survey on Concussions.

Circle one:  Pre-test

Post-test

1. A concussion is always associated with a loss of consciousness.
   Yes   No

2. Concussions can be sustained as a result of a jolt or blow to the body.
   Yes   No

3. You should not allow someone with a concussion to fall into a deep sleep. You
   should wake them and check them every so often.
   Yes   No

4. A normal CT scan or brain imaging scan, although expensive, will rule out a
   concussion.
   Yes   No

5. Adolescents and children recover better than adults from a concussion because
   they bounce back better.
   Yes   No

6. When used correctly helmets and other protective gear will prevent concussions.
   Yes   No

7. Concussions are Brain Injuries and can result in the same long term
   consequences.
   Yes   No

8. Once you have one concussion the likelihood of sustaining more in your lifetime
   a. Goes up.
   b. Staying the same.
   c. Goes down.
Answer Sheet

Survey on Concussions.

1. A concussion is always associated with a loss of consciousness
   i. Yes  No

2. Concussions can be sustained as a result of a jolt or blow to the body.
   i. Yes  No

3. You should not allow someone with a concussion to fall into a deep sleep, you should wake them and check them every so often.
   i. Yes  No

4. A normal CT scan or brain imaging scan, although expensive, will rule out a concussion.
   i. Yes  No

5. Adolescents and children recover better than adults from a concussion because they bounce back better.
   i. Yes  No

6. When used correctly helmets and other protective gear will prevent concussions.
   i. Yes  No

7. Concussions are brain injuries and in some cases can result in the same long term consequences.
   i. Yes  No

8. Once you have one concussion the likelihood of sustaining more in your lifetime
   a. Goes up.
   b. Staying the same.
   c. Goes down.
Chapter 1:
Concussion Signs and Symptoms.
During this presentation, the goal is for you to have a better understanding about signs and symptoms of a concussion. This information will be important if you see a team mate experiencing some of these symptoms and also if you, yourself sustain a concussion in the future.
Voice Over -

Because the brain is like Jello and is surrounded with fluid, when you get a hit to the head, the brain will move back and forth within the skull causing damage to blood vessels, nerve cells, and soft tissue. This in turn causes ions and chemicals in the brain, such as calcium, potassium, and phosphorus to move from the cells. The amount of initial rest, can determine how long it takes for the brain to recover and symptoms to go away.

Instructor: Click on the next slide to watch the video.

Instructor: FYI – video link is http://www.youtube.com/watch?v=Sno_0Jd8GuA&feature=player_embedded
Voice Over -

Most people with a concussion recover quickly and fully. It is less common that a person still has concussion symptoms after 6 weeks.

Symptoms can last for days, weeks, or longer. Immediately after a concussion, the amount of rest allowed to your brain, meaning limited reading, studying etc. can determine how long your symptoms may last.

Recovery may be slower among older adults, young children, and teens. The differences in recovery among the age groups depends on how the brain is developing.

Those with additional concussions take longer to recover. If the brain has not recovered from a concussion and a second concussion occurs, it may take longer to get back to normal.
A concussed person is more likely to have additional concussions
The brain is more at risk for a concussion with additional injuries.

Women are more susceptible due to weaker neck muscles
With weaker neck muscles, the head and brain move back and forth faster leading to more injury to the brain.

Genetic factors affect susceptibility and recovery.

Teenagers usually have more severe symptoms than adults or young children
When teenage brains are growing, injuries can have a bigger impact.

Concussions can occur even if there is not a direct blow to the head
Because the brain moves back and forth within the skull there does not have to be a direct blow to the head. A whiplash injury (example is when you are in a car accident and the car stops suddenly and your body is still moving) may lead to a concussion. Also a blow to other parts of head like the chin can also cause a concussion.
Instructor: On the next slide click on the video to see signs and symptoms of a concussion.
Signs and Symptoms of a Concussion video

http://www.youtube.com/watch?v=cjgoWh1Hcw0
Categories of symptoms of a concussion

Thinking / remembering
Physical
Emotional / Mood
Sleep

The 4 categories determine how severe a concussion is. You only need 1 consistent symptom for there to be a diagnosis of a concussion.
Thinking / remembering

- Difficulty thinking clearly
- Feeling “slowed down”
- Difficulty concentrating
- Difficulty remembering new information

At the time of the concussion, a person may not be able to remember what happened, for example they can’t remember the score of a game, follow a conversation or can’t focus.
Physical Symptoms

- Headache
- Fuzzy / blurry vision
- Nausea / vomiting (usually early on)
- Dizziness
- Sensitivity to noise or light
- Balance problems
- Feeling tired, having no energy

Voice Over -

Physical Symptoms

Headache
Fuzzy / blurry vision
Nausea / vomiting (usually early on)
Dizziness
Sensitivity to noise or light
Balance problems
Feeling tired, having no energy
Emotional / Mood changes

- Cranky
- Sadness
- More emotional than normal
- Nervousness / anxiety

A person who has sustained a concussion may also experience mood changes such as going from happy to sad quickly, unexplained nervousness.

Research shows girls are more prone to experience more emotionality during recovery period from a concussion than boys.
Sleep

- Sleep more than usual
- Sleep less than usual
- Trouble falling asleep and staying asleep

A person who has sustained a concussion will benefit from resting the brain which includes sleep, yet some people do have trouble sleeping during concussion recovery.

**Instructor:** additional activity available: See Chapter 1: Activity 1. For this activity students are required to match concussion symptoms with observations / feelings.
Voice Over -

Symptoms of a concussion

May appear right away.
Others may not be noticed for days after the injury.
Some people may not recognize or admit that they have problems/symptoms.
Others may not understand why they are upset or feeling different.

There are other symptoms of a concussion which you need to be alerted to. Athletes for example may not want to sit out from a game or practice, so they may not tell someone they are having symptoms of a concussion because they want to participate in sports.
In addition the signs and symptoms of a concussion can be difficulty to sort out.

Early on, problems may be missed by the person with the concussion, family members, or even doctors.

A person with a concussion may look fine even though they are acting or feeling differently.
How is a concussion diagnosed?

MRI and CAT scans detect bleeding within the brain tissue
- May not be present with a concussion

X-rays detect fractures of the skull bones
- May not be present with a concussion

Loss of Consciousness (LOC) does NOT have to occur to have a Concussion
- May not be present with a concussion

Diagnosis of a concussion is made by symptoms

There is continuous ongoing research to determine more accurate ways of diagnosing concussions.

**Instructor: FYI**

MRI/CAT Scan: Detail picture of the brain tissue/blood vessels
X-Ray: Detect fractures in bones
Danger Signs to ACT Immediately

- A headache that gets worse and does not go away
- Weakness, numbness or decreased coordination
- Repeated vomiting or nausea
- Slurred speech

Seek medical treatment IMMEDIATELY

Voice Over -

Danger signs to act immediately.

A headache that gets worse and does not go away
Weakness, numbness or decreased coordination
Repeated vomiting or nausea
Slurred speech

Seek medical treatment IMMEDIATELY for these symptoms

If you see someone with these symptoms or you experience these symptoms after a head bump, blow, jolt to the head; ACT Immediately and seek medical treatment; these symptoms are serious and must be evaluated by a doctor. These may occur hours later.
Transport the person to an Emergency Department Immediately or call 911 if the person:

- Looks drowsy or cannot be awakened
- Has one pupil (the black part in the middle of the eye) larger than the other
- Has convulsions or seizures
- Cannot recognize people or places
- Gets more confused, restless, or agitated
- Has unusual behavior
- Loses consciousness

Voice Over -

Transport the person to an emergency department immediately or call 911 if the person:

Looks drowsy or cannot be awakened
Has one pupil (the black part in the middle of the eye) larger than the other
Has convulsions or seizures, which is when the body stiffens and shakes.
Cannot recognize people or places
Gets more confused, restless, or agitated
Has unusual behavior
Or loses consciousness
References:

- [http://www.cdc.gov/concussion/signs_symptoms.html](http://www.cdc.gov/concussion/signs_symptoms.html)
- MomsTeam.com
- Brain Injury Alliance of Colorado
Concussion Signs and Symptoms.

Additional Activities:

Activity 1.

Matching Concussion Symptoms to Observations/How You Might Feel

Draw a line to match the symptoms to the observations/feelings

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Observations/Feelings</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Sadness</td>
<td>1. Snapping at other, arguing with friends, feeling short tempered, frustrated</td>
</tr>
<tr>
<td>B. Headache</td>
<td>2. Slouching, feeling tired, needing to sleep, getting headaches easily, lack of motivation</td>
</tr>
<tr>
<td>C. Fatigue</td>
<td>3. Squinting, head down, covering eyes, feeling frustrated</td>
</tr>
<tr>
<td>D. Difficulty remembering</td>
<td>4. Answering slowly, needing things to be repeated, others getting frustrated with you</td>
</tr>
<tr>
<td>E. Increased irritability/stressed</td>
<td>5. Feeling lost in class, forgetting to turn in work/make appointments, frustration</td>
</tr>
<tr>
<td>F. Feeling “slowed down”</td>
<td>6. Holding head, covering ears and eyes, seeking quiet, distracted, frustrated by noise and activity</td>
</tr>
<tr>
<td>G. Sensitivity to light/sound</td>
<td>7. Crying, feeling overwhelmed, avoiding social activities</td>
</tr>
</tbody>
</table>
Answer Key for matching activity.

Key:
A-7
B-3
C-2
D-5
E-1
F-4
G-6
Chapter 2:

You’ve got a concussion, so what?
In this section we are going to look at few different topic areas.
One, When concussion symptoms do not clear
Two, The effect of repeat concussions
Three, The effects of previous medical history
Four, Second Impact Syndrome
Five, Chronic Traumatic Encephalopathy also known as CTE.
Voice over –

Once again— the most important thing to do if you sustain a concussion is to rest your body and your mind. Listen to your body, if your symptoms increase, such as headaches or feeling super tired, then cut back on what you are doing and rest.
Voice over –

Above everything else, listen to your body! If your symptoms increase slow down and rest a while. If some activities such as video games or doing school work on a computer increase your symptoms, cut back and take a break.
Voice over –

Damage to your brain should be treated with the same care as any other injury. If you sprain your ankle badly and you don’t rest it, it will take longer to heal.

**Instructor:** additional activity available: See Chapter 2: Activity 1. Different scenarios are presented for your students to discuss in small group or as a whole group.
The first main topic we will cover today is - if your concussion doesn’t clear in 1 to 3 weeks.

With rest most concussions clear in one to three weeks. But, some people may continue to have symptoms for a long time especially if you try to ‘push through’ and ignore them.
Voice over –

What if your symptoms do not clear up within one to 3 weeks? Then you should go back to your doctor for a follow up.
Here’s the problem –

Doctors, parents and coaches cannot know how severe the concussion was until it is over, because it depends on how severe the symptoms were and how long it took to recover.

You can’t know the severity of a concussion until it is over because it depends on the how severe the symptoms were and how long it took to recover.
Medical procedures like CT scans of the brain and MRI's also cannot “see” or diagnose concussions. Therefore, doctors, parents and teachers must depend on you to report how you are feeling. It’s important to be honest about your symptoms, because it’s hard for parents, teachers and coaches to “see” your headache.

**Instructor:** additional activity available: See Chapter 2: Activity 2. Whole group or small group discussion: “What things can a person do for themselves if they find they are struggling with concussion symptom?”
Voice over –

The next short topic we are going to cover in this presentation is the effect of repeat concussions.

All concussions are different and unique to each individual.
Voice over –

As the specialists say, “If you have seen one concussion, you have seen one concussion”.
Voice over –

What we do know about having more than one concussions is that in general each new concussion takes a little longer to heal. That means a little more time you don’t quite feel yourself, and doing the things you do everyday such as learning or even hanging out with friends may not be so easy. Also, did you know, once you have had one concussion the chance of getting another one in your lifetime goes up. So remember to always take precautions, wear helmets and protect your valuable brain and don’t get caught up in risky behavior.

Instructor: additional activity available: See Chapter 2: Activity 3. This activity requires the student to read a short article “Kids’ repeat concussions may mean longer recovery” and answer 4 questions.
The third topic we are covering addresses previous medical history.

“Pre-existing conditions” is a medical condition or diagnosis that was around before the concussion.

Previous medical history and ‘pre-existing conditions’ can affect your recovery from a concussion, you may find it takes a longer time to recover or return to ‘normal’, and your symptoms may seem worse.
Voice over –

For example, ADHD, anxiety or migraine headaches. If you are already a person who has difficulty ignoring distractions or paying attention in a classroom full of people, then a concussion can make those symptoms worse for a while.
Voice over –

You may find using your time wisely, planning ahead and organizing, getting started on things, or using your memory seems a harder to do. These things are called ‘executive functions’. A concussion often knocks these processes off-line temporarily, so you might have more difficulty with these things.

This can be frustrating and you need to know when to ask for help, or when to take a break while your brain heals.

**Instructor:** additional activity available: See Chapter 2: Activity 4. This activity requires students to read a passage entitled “Resuming Everyday Life Too Quickly After a Concussion Might Delay Recovery”. Throughout the passage certain concepts have two distractor items included. The students are required to circle the correct answer to show they understand the information they are reading.
The forth topic covered in this presentation is Second Impact Syndrome. This is a medical condition in which the brain swells rapidly after a SECOND concussion. This condition only occurs when the person’s brain has NOT recovered from the first concussion. For example, cases of second impact syndrome have been found in football players who get a concussion during a game and insist they are fine and return to the game the same day, or within a few days.

Second Impact Syndrome causes rapid brain swelling, often resulting in coma, significant disability or death.
Second Impact Syndrome has only been found in people who get a second concussion before the first one has clear up. It is one of the main reasons people are encouraged to rest both their body and their brain and fully recover before taking part in sports again. And is an important reason why you should report your symptoms honestly if you ever get a concussion and make sure you rest and recover before returning to your sport.

Second Impact Syndrome is still rare and we do not know why some people are more likely to suffer from it than others. It is important to be aware of second impact syndrome because it causes rapid brain swelling, which often results in a coma, significant disability or in rare cases - death.
Take a look at this You Tube video Published on Nov 2000. It is the story from PBS Health Week of a high school athlete named Brandon Schultz who suffers from a life changing concussion.

**Instructor:** The video is 3minutes 55 seconds in length. Watch for signs of distress as students watch this video. Brandon’s life is irreversibly changed as a result of his impacts during football.

**Instructor say** “Don’t forget, concussions will clear if you make sure your brain gets plenty of rest, both physical rest of your body and mental rest of your brain. Second impact syndrome is still relatively rare. The main point we want you to take away is – if you sustain a concussion, which many of us will at sometime in our life. If we treat it right, allow it heal we should not see these long term and serious conditions”.

**Instructor:** additional activity available: See Chapter 2: Activity 5.
For this activity hand out a short article on Jake Snakenberg from the Denver Post.
Our final topic for this presentation is about Chronic Traumatic Encephalopathy or CTE. Many of you who follow the news about the National Football League will have heard of CTE because we are finding that many of our professional athletes, especially in high contact sports like Football, Hockey, Boxing, and Soccer have received repeat concussions over the course of their career. There is more and more evidence that these repeat concussions are causing CTE in our athletes.
CTE is a neurodegenerative disease, which is a loss of neurons or brain cells over time and is thought to be caused by repeated exposure to brain trauma like concussions.

It is most commonly found in professional athletes in boxing, football, ice hockey, soccer and other contact sports.

CTE can only be diagnosed post-mortem, in other words, after death. Many of you may know of Junior Seau, he was a linebacker in the National Football League. Known for his passionate playing style, he was a 10-time All-Pro, 12-time Pro Bowl selection, and named to the NFL 1990s All-Decade Team. Junior Seau is also an athlete who suffered from CTE which caused him to become depressed and eventually take his own life.
Owen Thomas age 21
CHRIS HENRY (NFL)

- Age 26
Bob Probert age 45
Ryan Freel age 36

These athletes have all been diagnosed with CTE.
Voice over –

The symptoms of CTE include dementia, which is forgetfulness and problems with normal thinking, aggression, confusion and depression. Some of these symptoms appear within a few months of a brain injury, others may not appear for many decades.
Voice over –

CTE is characterized by an accumulation of tau protein in the brain. In this slide the brown color is “tau” protein. This protein causes cell death.
Voice over –

As you can see from this slide, the brain with CTE is shrunken down, has big gaps and holes, and is darker in color due to the tau protein.
Voice over –

The main thing to remember from all this is the 3R’s to Recognize when you have a concussion, Rest and Recover.

Instructor: additional activity available: See Chapter 2: Activity 6. This activity is a short crossword puzzle. Students are required to use their new knowledge to complete this puzzle.
You’ve got a concussion, so what?

Additional Activities.

Activity 1:

Scenarios

Divide the large group into small groups of 4. Have the group discuss one of the scenarios below answer the questions. Share out to the whole group.

1. During a soccer game, you notice that your teammate seems disoriented and is stumbling around on the sideline. You are concerned because your teammate isn’t acting normal. Why are you concerned? Who should you talk to if anyone?

2. A friend invites you over to play video games. As you’re playing, you notice that he cannot focus, seems to be forgetting how to play the game, and is saying the same things over and over. You ask him if anything is wrong, and he mentions that he hit his head earlier in the day and that he’s having bad headaches. Are you concerned? Why or why not?

3. As you’re practicing cheerleading after school, one of your teammates is thrown into the air, but her spotter drops her. She lands on her neck and head. When you rush over to check on her, you notice that she is unconscious. A couple of minutes later, she wakes up but doesn’t know where she is or how she got there. What do you do? Who should you notify if anyone?

4. You’re in a hurry and are walking quickly down your driveway. It’s icy, and you slip and hit your head on the concrete. Other than being embarrassed, you feel okay so you go inside your house. A few hours later, you feel nauseated and dizzy. The bright lights in your house are giving you a headache. What should you do? Why are your symptoms concerning to you?
Activity 2:

Whole group or small group discussion:

“What things can a person do for themselves if they find they are struggling with concussion symptom?”

Looking for examples such as –

- Let your parents and teachers / school counselors you know what you are struggling with so that they can support you.
- Go back to your doctor for a checkup.
- Finding somewhere more quiet to work, sitting away from distractions,
- Using a baseball cap or other method to block out visual distractions,
- Headphones to keep out noise,
- Recognizing that you may have to take frequent breaks, especially after a period of intense focus.
- Ask for help.
- Get copies of teacher notes of peer notes.
- Give yourself permission to be a little cut back and de-stress for a time with the understanding that it will not last forever and you may have to make up some work once the concussion has cleared.
Activity 3:
Read the following passage and answer the questions below.

**Kids’ repeat concussions may mean longer recovery**

Published June 10, 2013: www.foxnews.com

Young people may take longer to recover after their second or third concussion, a new study suggests. Researchers typically believe the average athlete needs up to two weeks to stop having symptoms - such as headaches and memory problems - after a concussion. But in the new study, children and young adults who had just suffered their second concussion in the last year took an average of 35 days to get back to normal.

"We have to be cautious in terms of after two weeks, if you still have symptomatic athletes, that you're not trying to hurry them back," said Dr. Paul Comper, a concussion researcher from the University of Toronto.

"The most important piece of information that comes out of this study is, if you've had prior concussions, the 10- to 14-day (recovery) thing may be completely out the window," Comper, who wasn't involved in the new study, said. "For you, it might be a month."

He said the findings aren't totally surprising - it's clear that multiple head injuries are a bad thing - but they give doctors more information to pass on to their young patients after a concussion.

Answer the following questions:

1. What did you learn from this article?

2. Are you surprised by the information? If so, why?

3. Why do you think second and third concussions take longer to heal?

4. What do you think you should do if your concussion takes longer than 4 weeks to heal?

Reference: http://www.foxnews.com/health/2013/06/10/kids-repeat-concussions-may-mean-longer-recovery/
Activity 4:
Read the passage below and circle the correct answer.

Resuming Everyday Life Too Quickly After a Concussion Might Delay Recovery
By Dan Pezzulo, NCSP posted Jan 13, 2014 2:17 PM

For the study, Dr. Brown's team followed 335 people aged 8 to 23 who had suffered a concussion. Their average age was 15. Young people who suffer a concussion often want to return to school right away / a week later / in time for the next game and begin using electronics / public transport / bad language right away, but resuming everyday life too quickly / slowly might delay recovery, researchers say.

Kids who give their brains a few days' rest and gradually return to normal mental activity heal faster / slower / about the same as than those who rush back to their books, computers and TVs, a new study suggests.

Senior study author Dr. William Meehan, director of the Sports Concussion Clinic at Boston Children's Hospital, said that although the findings suggest vigorous mental exertion is beneficial / detrimental to recovery, more moderate levels of mental exertion do not seem to prolong recovery substantially. "We recommend a period of near full mental rest after injury -- approximately three to five weeks / days / months -- followed by a gradual return to full levels of mental activity," Meehan said.

Brown said parents might overreact and want their children to refrain from any activity that requires concentration. But the study of more than 300 concussion patients, which was published online Jan. 6 in the journal Pediatrics, showed that only those who reported the most mental activity took the longest time to fully recover -- an average of 5 / 100 / 43 days.

For the others, a complete retreat from mental stimulation was no more effective than partial rest. "If you shut down completely, meaning you don't go to school or do any reading or screen time, or if you do a little bit less than normal, you recover in the same time period -- an average of 20 to 50 days," Brown said.

After concussions, young people can resume normal mental activity a little at a time. Brown suggested working only to the point where symptoms such as headaches, blurred vision or dizziness begin / become unbearable. That's when the brain is being overstimulated / under stimulated.

"We are not recommending complete abstinence from school, especially after the first week," she said. "If you go to school for a couple of hours and you are doing OK, then the next day you can go for a little bit more and slowly test it out."
Dr. John Kuluz, director of traumatic brain injury and brain rehabilitation at Miami Children's Hospital, said he counsels concussion patients to take it easy. "A video game / rest / lots of chocolate is the cornerstone of concussion therapy," he said. "I tell my patients, 'You have to slow down / eat fast, but I don't want you to do nothing. I want you to find the right amount of mental activity for you, and you find that level by paying attention to your symptoms,'" Kuluz said.

For those who gave their brains time to heal, recovery time was cut to an average of 5 / 100 / 43 days, the study found.

SOURCES: William Meehan, M.D., director, Sports Concussion Clinic, Boston Children's Hospital; Naomi Brown, M.D., Division of Sports Medicine, Children's Hospital of Philadelphia; John Kuluz, M.D., director, traumatic brain injury and neurorehabilitation, Miami Children's Hospital; February 2014.
Activity 4: Answer Sheet-

Resuming Everyday Life Too Quickly After a Concussion Might Delay Recovery

By Dan Pezzulo, NCSP posted Jan 13, 2014 2:17 PM

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Activity 5:

*(Hand out short article on Jake Snakenberg from the Denver Post)*

Directions:

**Say** “Look over the article I have just handed out:
“In Colorado, our Governor passed the Jake Snakenberg Youth Concussion Act in 2012. Jake was a high school footballer from Aurora, Colorado who died from sudden impact syndrome and his parents, teachers and coaches persuaded our local government to put a law in place that means all young people from the age of 11 to 18 either in school sports or private clubs have to sit out if a concussion is suspected. They also have to return to play gradually, and be cleared by a doctor before returning to play. In some places students have to pass tests such as the IMPACT test before they are allowed to return to their sport”.

In either small groups with options to share out after a few minutes, or in the whole group -

**Ask** “Who knows how the Jake Snakenberg Youth Concussion Act has impacted our school district?”

Looking for things such as –

- Using impact test for high contact sports.
- Have to be cleared by doctor before return to play.
- Have to return to play gradually monitoring symptoms.
- Teachers are asked to adjust expectations in the classroom and for homework while the student still has symptoms.
- Students, school and staff and family are becoming more and more aware of the impact of concussion and how to manage them
- The culture around concussions is changing. No longer just “having your bell rung”.


Signs weren't obvious in concussion death of Jake Snakenberg.

By Ryan Casey  
*The Denver Post*

POSTED: 10/17/2010 01:00:00 AM MDT | UPDATED: 4 YEARS AGO

All Kelli Jantz knew was that her son had a strange tingling in his hands.

"He wasn't feeling bad, didn't complain of headaches," she recalled. "Nothing really out of the ordinary."

The day was Sept. 18, 2004, a Saturday. Her son, Jake Snakenberg, a freshman football player at Grandview, had been injured in a game the week before but assured his mom he was ready to play that day.
"I don't know if Jake was fine (or) if he wasn't. He wanted to play," Jantz said. "We didn't see anything."

That morning, Jantz remembers coming downstairs at 6:30 a.m. Teammates who had spent the night were asleep on the couch. Not Jake. He was up, ready to talk with his mom over breakfast.

Later that morning, at the game against Thomas Jefferson, she watched nervously as Jake shook a bit after taking a hit in warm-ups. "He nodded," Jantz recalled, "as if to say, 'I'm fine, Mom.'"

During the game, Jake, a fullback, took another hit. Nothing bone-jarring. A normal football hit.

"He fell over," Jantz said. "Just right over."

Officials stopped the game. Jake got up, began to wobble and went down again. Something was not right.

"We kind of had a pact that I would not be a maniac mom at football games and come running on the field. So I waited," Jantz said. "He never got up."

Paramedics responded within seven minutes of being called and determined Jake needed to be flown to Swedish Medical Center. At the emergency room, the neurosurgeon told Jantz that her son had suffered a major brain injury and he would likely never play football again.

"Then," Jantz said, "he followed it with, 'If he survives.'"

Jake, the kid with the disarming giggle, the family's social butterfly, the one who would look out for the underdog, died the next day from complications resulting from Second Impact Syndrome.
REAP, a cutting-edge standard for concussion management of high school athletes, and written by Dr. Karen McAvoy, a former school psychologist at Grandview, is dedicated to Jake's memory.

"I can't say enough about what that means," Jantz said. "I'm proud of him. If he were alive, he would want to do something like this. It's fitting that in his absence, he still has some sort of impact."

Rocky Mountain Children's Health Foundation has established the Jake Snakenberg Memorial Fund, in order to financially assist continuing research and education on concussions. For more information, call 303-839-6782.
Activity 6:

You’ve got a Concussion.

So What?

Across
5. Symptom of CTE.
8. It takes more _______ for repeat concussions to clear.
10. Week that symptoms can clear if you rest?
11. If your symptoms increase, you should?

Down
1. Previous ________ history can affect your recovery time.
2. A condition that high contact athletes may get after repeated concussions?
3. If in doubt, _______ it out!
4. The protein that is found in CTE patients?
6. We don't know the _______ of a concussion until it clears?
7. Damage to your ______ should be treated with the same care as any other injury.
9. Wouldn't it be nice if you turned ______ when you had a concussion, so doctors, parents, and teachers would know?
Activity 6: Answers

Answers
Across-
5. Dementia
6. Second
8. Time
10. One
11. Rest

Down-
1. Medical
2. CTE
3. Sit
4. Tau
6. Severity
7. Brain
9. Green
Chapter 3:
Ways to help your teammates.
Module 3: Ways to help your teammates if a concussion is sustained.

Voice Over—

If you have a friend or are a friend to someone, this message is for you! A good friend will tell you the truth, even when it is difficult. Sometimes friends can see things in us that we can’t see ourselves. Who has ever had a friend tell you “XYZ,” or “you have broccoli stuck between your teeth.”? This is the kind of honest feedback you need if you ever get a concussion.

Instructor: say -- XYZ= Examine your zipper. Honest feedback from friends who care can be invaluable. Team sports foster a sense of community which can be helpful or harmful depending on how the coach leads. Coaches who are equipped with information on concussions can help players prevent long term damage to their delicate brains. Students take the lead of their coach and players.
How can I get a concussion?

- Contact sports, especially:
  - Football
  - Boxing
  - Hockey
- Falls
- Car accidents
- Bike accidents
- Fighting

Voice Over—

It is most common to get concussions through sports like football, boxing, and hockey. People also get concussions from playing soccer, being a cheerleader, or even swimming! Any time you are going faster than your legs can carry you (such as on skis, a sled, a skateboard, roller blades, etc.) you put yourself at risk for a concussion. People have gotten concussions from falling off monkey bars, falling off a horse, and even by getting hit by a fast icy snowball! Girls tend to have more symptoms than boys with concussions and take longer to heal.

Instructor: say -- It does not always take a big hit to get a concussion. Even if it did not look like someone hit their head hard, if you notice them acting differently tell someone. Everyone is different. Some hits will cause a concussion in one person, while in another person that same type of hit will not cause an injury. Everyone heals at different rates. Some people will recover after a few days, and others will take a few weeks or even months to get better.
A study conducted at the Florida Center for Headache and Sports Neurology compared 10 different football helmets and measured forces involved in the game of football. They found that helmets prevent skull fractures, but they don’t prevent concussions. The brain still jiggles like jello against the inside of your hard skull when you are hit hard. Helmets may protect the outside of your head, but they do nothing to prevent the forces of a hit from causing your brain to slam against your skull.

**Instructor: say** -- Helmets do exactly what they were made to do. Prevent skull fractures. There is no way a helmet can prevent a concussion because you cannot keep the brain from moving inside your skull. Wearing helmet will not make you invincible. Just because you have protection for the skull does not mean you will not get hurt. Many athletes have gotten concussions while wearing a helmet when playing their sport.

**Instructor: FYI** --The study referenced was from the Florida Center for Headache and Sports Neurology link:
If your teammate or friend has a concussion, let someone know. Hiding any of these symptoms could lead to longer recovery times, permanent brain damage, or death (in second impact syndrome). Helping a friend identify symptoms of a concussion can mean the difference between life and death! You can identify symptoms that your friend may not even catch. This video shows some of the odd behaviors you may see after a concussion.

**Instructor: say** -- There are many more symptoms of concussions that are not listed. If you notice someone acting differently during or after a practice or game tell someone. Sometimes they just need to drink more water. But if they had a big hit and they start acting funny afterwards you could be saving them from severe complications. Tell an adult you are worried about your friend so that they can make sure your friend sees someone who can help.

**Instructor:** Additional activities available: See Chapter 3 Activities 2-4 at the end of this chapter.
Activity 2 is titled “Comprehension Passage.” This is an experiential activity which helps students gain awareness of how a concussion can cause a decrease in listening/reading comprehension.

Activity 3 is titled “Double Trouble.” This is an experiential activity which helps students gain awareness of how concussions can cause visual deficits in some individuals. This activity requires double vision glasses or swim goggles and Vaseline.

Activity 4 is titled “The Wright Family Story.” This is an experiential activity which helps students gain awareness of how some individuals experience difficulty with processing speed following a concussion.
Your friend has a concussion, how can you help?

- Recognize
- Report
- Rest
- **If in doubt, sit it out**

**Voice Over**—

Remember to take the next steps: Recognize your symptoms or those in a friend, report the concussion to your coach, doctor, or parent, and be sure to give your brain plenty of rest. This means avoiding screen time. No texting, getting on a computer, watching TV, or playing electronics. This will strain your brain and make it take longer to heal. Sometimes athletes fake feeling better because they want to play. Friends don’t let friends ignore a concussion. Be honest about your symptoms and you will heal more quickly.

**Instructor: say**— It is always better to play it safe than to risk having permanent damage. While it is not fun to have to sit out and watch your friends continue to play and compete, you will get to rejoin them if you are honest about how you are feeling. If you take the time to rest and let your brain fully heal you will be back out there playing with your friends in no time! “If in doubt, sit it out” is a link to a 14 minute video from the National Athletic Trainers Association called “What is a Concussion?”
Ways to Help Your Teammates if a Concussion is Sustained

Chapter 3 Additional Activities.

Chapter 3 Activity 1: Whole group or small group discussion:

Watch the video “What is a Concussion” with link title, “If in doubt, sit it out,” and answer the following questions:

1) How many concussions are too many?

2) What are some symptoms of concussion (physical, cognitive, emotional, and sleep)?

3) What is the best medicine for healing after a concussion?

4) Why do you think “screen time” slows the healing process after a concussion?

5) When is it safe to return to play after a concussion?
Chapter 3 Activity 1: Whole group or small group discussion:

Answer Key:

1) There is no way to know how many concussions are too many for a person. Some stop playing after 1 hit, some after 15. Everyone is different. The best marker of a concussion is not how many you have, but how long symptoms last. Every concussion should be taken seriously and healed fully before coming back to play. Listen to your medical professionals and follow their advice.

2) Physical: headache, nausea, dizziness; Cognitive: attention problems, memory dysfunction, fatigue; Emotional: sadness, nervousness, irritability; Sleep: difficulty falling asleep, sleeping less than usual.

3) Time is the best healer of a concussion.

4) To get back up to speed ASAP, your brain needs downtime. Even though games, texting, and watching TV seem simple, your brain has to work to keep track of what's happening on the screen. That's why you need to take a break from them after a concussion.

5) When all your symptoms are gone and you are cleared by your doctor and coach, then it is safe to return to play.
Activity 2

COMPREHENSION PASSAGE

Subject: Science, Health, or Language Arts

Objective:
- To develop a basic understanding and awareness of brain injury (specifically how some individuals may experience decreased listening/reading comprehension following a brain injury).

Materials:
- "Comprehension Passage" (see below)

Procedure:
1. Instruct the students to listen to the comprehension passage while you read it to them. Tell the students to think about what the activity is that you are describing.
2. Read the following "Comprehension Passage" to the class:

Doing this is really easy. First, put the “things” in different piles—or just one if there are not too many “things”. Doing a few “things” at a time is better than many “things”. This activity can get tricky. Mistakes can happen and cost money. But after awhile you get used to doing this. And that’s good because this activity never ends. After you do this activity you put the “things” in groups again. Then you can put the groups away. Later the “things” will be used again. And then you start all over again. That’s life!

Discussion:
- "Does this activity sound easy?"
- "What am I talking about?" (answer: laundry)
- "Was it confusing the way I described the activity of doing laundry?"
- Reread the passage and explain how each sentence relates to doing laundry.
- "What do you think life would be like if you always felt that people were telling you things that did not make sense, or everything you read was confusing?"
- Prompt discussion surrounding issues some individuals may experience following a brain injury. (i.e., difficulty following procedures, decreased ability to reason or effectively solve problems, etc.)

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Activity 3

DOUBLE TROUBLE

Subject: Science or Health

Objective:
- To develop an understanding and awareness of brain injury (specifically the visual deficits some individuals experience following a brain injury).

Materials:
- Double Vision Glasses (if available) or Swim Goggles and Vaseline

Procedure:
1. If double vision glasses are not available, rub Vaseline on the lenses of swim goggles to simulate blurred vision.

2. Create an obstacle course in the classroom with the students' desks, trash cans, etc.

3. Instruct the students to walk the obstacle course while wearing the glasses or goggles.

4. Next, ask the students to attempt to write their names while wearing the glasses or goggles.

5. If double vision glasses are available, have the students attempt to replace a cap on a pen while wearing the glasses.

Discussion:
- "What was it like trying to do these activities while you were wearing the glasses/goggles?"
- "Did you find it difficult?"
- "Did you feel insecure about your environment when you were unable to see clearly?"
- "Some individuals experience blurred or double vision following a brain injury. Imagine what life would be like if you had blurred or double vision? How would you move around your home? How would you get to school? Would it be difficult to complete your homework assignments? What about trying to watch TV or ride your bike?"

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Activity 4

THE WRIGHT FAMILY STORY

Subject: Language Arts/Reading or Health

Objective:
- To develop a basic understanding and awareness of brain injury, (specifically how some individuals may experience difficulty with speed of processing following a brain injury).

Materials:
"The Wright Family Story" (page 31)
A small item for each student to hold (i.e., pencil, pen, piece of chalk, etc.)
Arrange the students in a circle

Procedure:
1. Instruct the students to listen carefully to "The Wright Family Story" while you read it to them.
2. Tell the students to pass the object they are holding to the right whenever they hear the word "right/Wright" and to pass the objects to the left when they hear the word "left."
3. Read the story slightly faster than a normal pace.

Discussion:
- "How many children were there in the Wright family?" (4)
- "What were their names?" (Tommy, Susan, Timmy, and Shelly)
- "Who was left at home at the beginning of the story?" (Aunt Linda)
- "Which child ran home to get the money?" (Timmy)
- "Which child got sick at the gas station?" (Susan)
- "How did this activity make you feel?"
- "Did you start to get confused about the direction you should be passing your object?"
- "Was it hard to concentrate or keep up with the story?"
- "Did you find your attention being divided between the story and passing the objects left and right?"
- "Imagine what life would be like if you had difficulty keeping up with the information being presented to you? Some individuals experience challenges with 'speed of processing' following a brain injury."
THE WRIGHT FAMILY STORY

One day the Wright family decided to take a vacation. The first thing they had to decide was who would be left at home since there was not enough room in the Wright family car for all of them. Mr. Wright decided that Aunt Linda Wright would be the one left at home. Of course this made Aunt Linda Wright so mad that she left the house immediately, yelling, "It will be a right cold day before I return!"

The Wright family now bundled up the children Tommy Wright, Susan Wright, Timmy Wright and Shelly Wright and got in the car and left. Unfortunately, as they turned out of the driveway, someone had left a trash bin in the street so they had to turn right around and stop the car. They told Tommy Wright to get out of the car and move the trash can so they could get going. Tommy took so long that they almost left him in the street. Once the Wright family got on the road, Mother Wright wondered if she had left the stove on. Father Wright told her not to worry. He had checked the stove and she had not left it on. As they turned right at the corner, everyone started to think about other things that they might have left undone.

No need to worry now, they were off on a right fine vacation. When they arrived at the gas station, Father Wright put gas in the car and then discovered that he had left his wallet at home. So Timmy Wright ran home to get the money that was left behind. After Timmy left, Susan Wright started to feel sick. She left the car saying that she had to throw up. This of course got Mother Wright's attention and she left the car in a hurry. Shelly Wright wanted to watch Susan get sick so she left the car too. Father Wright was left with Tommy Wright who was playing a game in the back seat.

With all of this going on Father Wright decided that this was not the right time to take a vacation so he gathered up all of the family and left the gas station as quickly as he could. When he arrived home, he turned left into the driveway and said, "I wish the Wright family had never left the house today!"
Survey on Concussions.

Circle one: Pre-test

Post-test

1. A concussion is always associated with a loss of consciousness.
   Yes  No

2. Concussions can be sustained as a result of a jolt or blow to the body.
   Yes  No

3. You should not allow someone with a concussion to fall into a deep sleep. You should wake them and check them every so often.
   Yes  No

4. A normal CT scan or brain imaging scan, although expensive, will rule out a concussion.
   Yes  No

5. Adolescents and children recover better than adults from a concussion because they bounce back better.
   Yes  No

6. When used correctly helmets and other protective gear will prevent concussions.
   Yes  No

7. Concussions are Brain Injuries and can result in the same long term consequences.
   Yes  No

8. Once you have one concussion the likelihood of sustaining more in your lifetime
   a. Goes up.
   b. Staying the same.
   c. Goes down.
Answer Sheet

Survey on Concussions.

1. A concussion is always associated with a loss of consciousness
   i. Yes  No

2. Concussions can be sustained as a result of a jolt or blow to the body.
   i. Yes  No

3. You should not allow someone with a concussion to fall into a deep sleep, you should wake them and check them every so often.
   i. Yes  No

4. A normal CT scan or brain imaging scan, although expensive, will rule out a concussion.
   i. Yes  No

5. Adolescents and children recover better than adults from a concussion because they bounce back better.
   i. Yes  No

6. When used correctly helmets and other protective gear will prevent concussions.
   i. Yes  No

7. Concussions are brain injuries and in some cases can result in the same long term consequences.
   i. Yes  No

8. Once you have one concussion the likelihood of sustaining more in your lifetime
   a. Goes up.
   b. Staying the same.
   c. Goes down.
References

Articles:


Activities:


Pezzulo, Dan, M.D., Meehan, William, M.D., Brown, Naomi, M.D. & Kuluz, John, M.D. (February 2014). Circle the Word Activity; Resuming Everyday Life Too Quickly After a Concussion Might Delay Recovery.

Videos:

