

# CONCUSSION MANAGEMENT Guidelines & Procedures

## Concussion Facts

- ◆ **Concussions** can occur **in any sport**, male or female sports, at any age.
- ◆ An athlete **does not** always lose consciousness – “knocked-out” – when suffering a concussion.
- ◆ Concussion symptoms may last from a few days to **several months**.
- ◆ Concussions can cause symptoms **that interfere** with school, work and social life.
- ◆ A concussion may cause multiple symptoms.
- ◆ Many symptoms **appear immediately** after the injury. ◆ Other symptoms may develop over the **next several days or weeks**.
- ◆ Symptoms may be subtle and **are often difficult** to fully recognize.

## Signs & Symptoms

You cannot see a concussion, but you might notice symptoms right away. Other symptoms can show up hours or days after the injury.

### Signs observed by coaches, parents, teachers, teammates

- ◆ Appears dazed or stunned
- ◆ Is confused about what to do
  - ◆ Forgets plays
- ◆ Is unsure of game, score or opponent
  - ◆ Moves clumsily
  - ◆ Answers questions slowly
  - ◆ Loses consciousness
- ◆ Shows behavior or personality changes
- ◆ Can't recall events before hit
- ◆ Can't recall events after hit

### Symptoms reported by athlete

- ◆ Headache
- ◆ Nausea
- ◆ Balance problems or dizziness
  - ◆ Double or fuzzy vision
  - ◆ Sensitivity to light or noise
    - ◆ Feeling sluggish
    - ◆ Feeling foggy or groggy
- ◆ Concentration or memory problems
  - ◆ Confusion

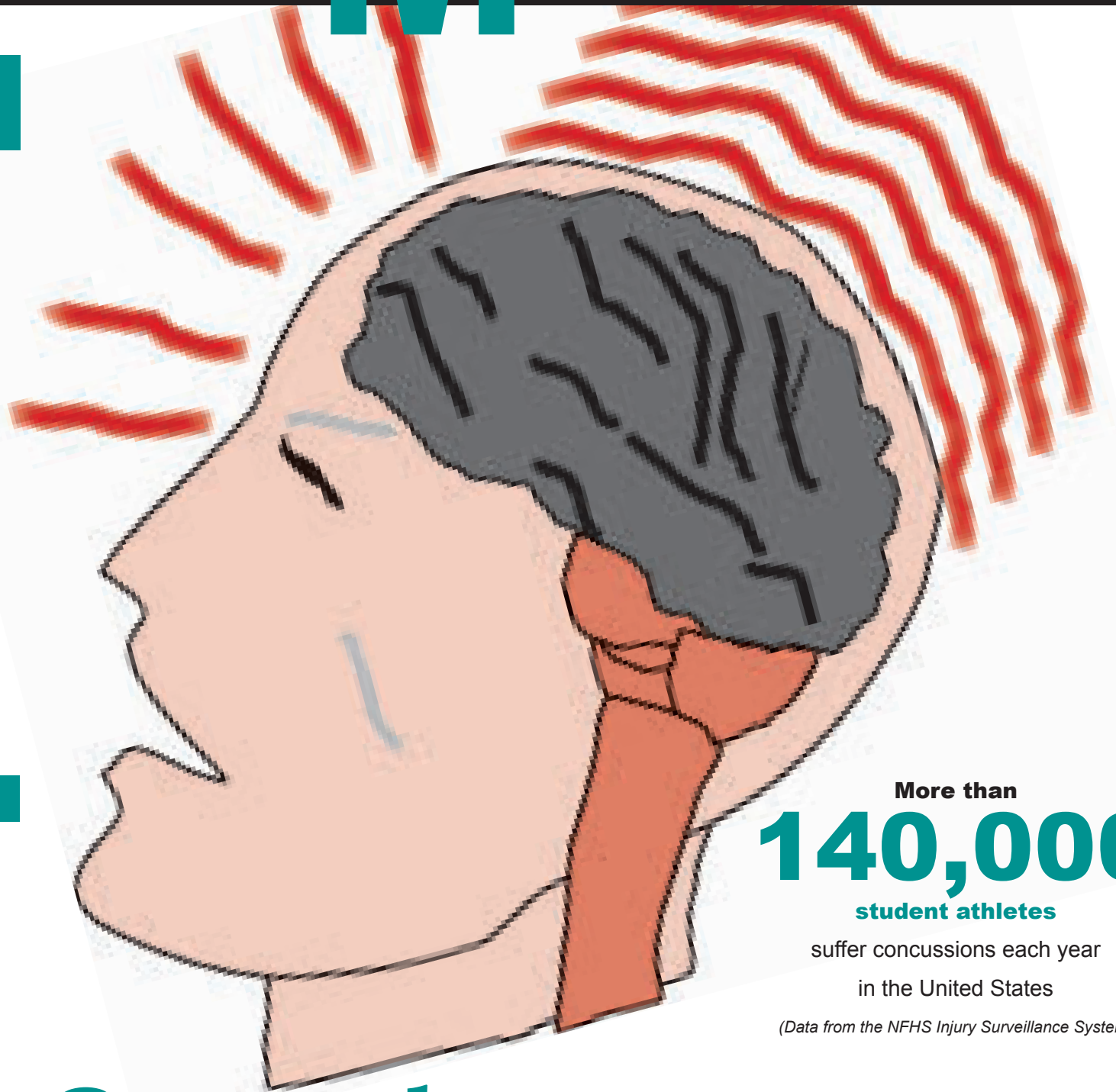
## Return To Play

**Before a student** with a concussion will be allowed to participate in an athletic program again, the student must present a **written release** from a **licensed practitioner**.

For specific **return-to-play regulations** and the types of licensed practitioners who can issued these releases, look inside.

## On the web

This document is also available online on the Lancaster County School District website at [www.lancasterschools.org](http://www.lancasterschools.org)



More than  
**140,000**  
student athletes

suffer concussions each year  
in the United States

(Data from the NFHS Injury Surveillance System)

## Our goal: Protect our students

**O**ur district's goal is to be proactive instead of reactive in our management of concussions in our students.

Since our district's primary mission is to help our students develop their brain power and become more mature thinkers through academic and social settings, we believe we must do our best to protect and help our students' ability to mature mentally.

**T**he guidelines and procedures we have adopted for concussion management are not all inclusive. We recognize that each concussion case is individual. Some students will progress quickly and others may take more time.

These guidelines and procedures are our attempt to be prepared for all cases so that we may do what is right for our students.

**O**ur district believes the best method for concussion management involves a multi-disciplinary team trained

and equipped to put the best interest of the student first.

That's why our district is basing our concussion management guidelines and procedures on The REAP program.

- ◆ The REAP program was written by Karen McAvoy, PsyD. of the Rocky Mountain Youth Sports Medicine Institute of Centennial, Colorado.
- ◆ The program is a multidisciplinary approach to concussion management of students by a *Concussion Assistance Team* in each school. This team is composed of the sub teams that are explained in this guide.
- ◆ The members of the teams and their responsibilities will vary at each school that uses the program because of personnel at the schools.
- ◆ On the next three pages are our district's plans to implement the REAP program into a living plan to fit our students' needs and fulfill our capabilities as a district.

## What is a concussion?

**A** concussion is any brain injury that results in a temporary disruption of normal brain function.

### Causes of a concussion

A concussion occurs when the brain is violently rocked back and forth or twisted inside the skull as a

result of a blow to the head or body.

This type of rocking can occur in sports from

- contact with another player,
- hitting a hard surface such as the ground, court, wall or goal post or
- getting hit by a piece of equipment such as a bat, stick or ball.

### Signs & symptoms

Signs and symptoms of a concussion are broken into four areas (McAvoy, 2011):

- Physical,
- Cognitive,
- Emotional and
- Maintenance.

# Signs & symptoms of a concussion

## • Physical symptoms

*How a person's body reacts*

- Headache/pressure
- Blurred vision
- Dizziness
- Poor balance
- Ringing in ears
- Seeing "stars"
- Vacant stare
- Nausea
- Vomiting
- Numbness/tingling
- Sensitivity to light
- Sensitivity to noise
- Disorientation
- Neck pain

## • Cognitive symptoms

*How a person thinks*

- "In-a-fog" feeling
- "Slowed-down" feeling
- Difficulty remembering
- Difficulty concentrating/easily distracted
- Slowed speech
- Easily confused

## • Emotional symptoms

*How a person feels emotionally*

- Inappropriate emotions
- Personality change
- Nervousness/anxiety
- Feeling more "emotional"
- Irritability
- Sadness
- Lack of motivation

## • Maintenance symptoms

*How a person experiences their energy level and/or sleep patterns*

- Fatigue
- Excessive sleep
- Trouble falling asleep
- Drowsiness
- Sleeping less than usual

## Remember

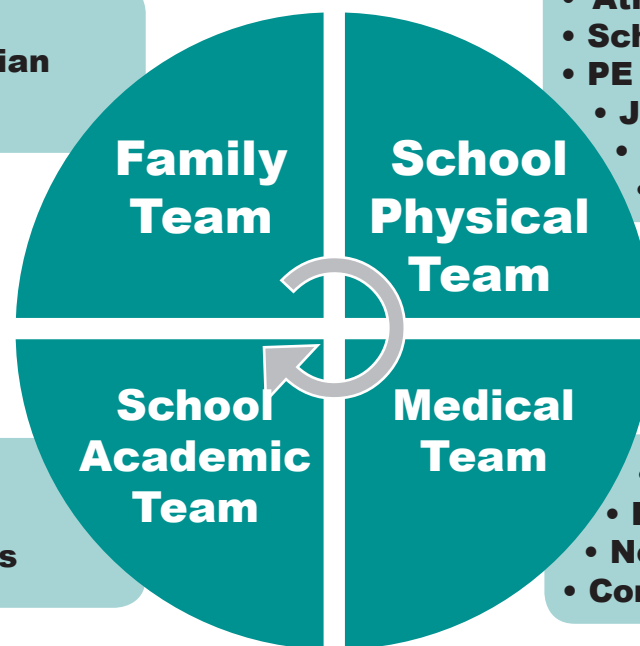
Not all signs or symptoms will be displayed.

# Our district's Best Practices beliefs

Our district believes

- the best method to concussion assistance should involve a multi-disciplinary team trained and equipped to put the best interest of the student first.
- four teams should be involved with a student's care after a concussion:
  - The Family Team,
  - The School Physical Team,
  - The School Academic Team and
  - The Medical Team.
- **Please note** – The team list is not all inclusive.
  - Every school is unique in the resources it has, and our district wants to leave room for growth in our schools' concussion management program.
  - All members listed may not be available to join the *Concussion Assistance Team*.

- **Students**
- **Parents/Guardian**
- **Friends**



- **Athletic trainers**
- **School nurses**
- **PE teachers**
- **JROTC instructors**
- **Athletic directors**
- **Coaches**

- **Teachers**
- **Counselors**
- **Administrators**

- **Emergency Dept.**
- **Primary physicians**
- **Neurologists**
- **Concussion specialists**

- Each school community is different and could be unique in team members, but rep-

resentation from each team will be part of the *Concussion Assistance Team*.

## Concussion Assistance Team responsibilities

# Team roles in concussion management

### ◆ Administration

- Helps with the change in culture of concussion management by putting in place concussion management policies
- Provides the necessary programs and training for all involved with concussion management to help students return fully and safely to athletics and academics

### ◆ Athletic Director

- Promotes concussion awareness to students/athletes/coaches
- Helps with facilitation of training for all parties involved
- Monitors the appropriate incident protocols
- Encourages the proper tracking of all injuries

### ◆ Certified Athletic Trainer

*If the Certified Athletic Trainer is employed at the school,*

- Helps with treatment and gradual return to play of the student athlete per physician's orders
- Notifies the school nurse and the *Concussion Assistance Team* Coordinator that an athlete has sustained a concussion and provides information on the athlete and his/her condition
- Plays a vital part of *School Physical Team*
- Helps provide education to staff and coaches on concussion signs, symptoms and treatment protocols for head injuries and concussions

### ◆ Coach

- Responsible for knowing and implementing the rules of his/her perspective sport

- Insures safe conditions for practice and play
- Must remove a student athlete with a possible head injury from play until cleared by a physician familiar with head and brain injuries
- Must help implement gradual return to play as specified in procedures if a Certified Athletic Trainer is not available

### ◆ School Counselor

- Helps oversee the return to academics by a student with a concussion
- May provide counseling to the student when needed
- Helps keep teachers informed of the student's progress

### ◆ School Nurse

- Helps with daily treatment of the student athlete
- Is involved with the *School Physical Team* for implementation of the *Concussion Assistance Team*
- All physician notes should go through the school nurse and Certified Athletic Trainer (if present) for the physical and academic school teams of the *Concussion Assistance Team*

### ◆ Teachers

- Work as part of the *Concussion Assistance Academic Team*
- Help provide accommodations as needed for the student
- Help in daily assessment with signs and symptoms of concussion in the student for the *Concussion Assistance Team*

- Send *Teacher Concussion Assistance Team* form to *Concussion Assistance Team* facilitator

### ◆ Parents

- Take student athlete to proper medical professional as soon as possible
- Sign the release notifying the school of the student's condition so the rest of the *Concussion Assistance Team* can be prepared for the student's return to school
- Monitor signs and symptoms at home (listed at top of this page)
- Communicate with the school and medical teams about student's progress and any regressions
- Make the student rest – physically and cognitively
- Allow no video games, computers, TV, texting, driving, prolonged reading until the student is cleared for these activities by a medical professional and signs and symptoms of a concussion are totally absent

### ◆ Student/Athlete

- RESTS, RESTS, RESTS until signs and symptoms of a concussion are totally absent
- Listens and does what is recommended by medical professionals and school staff
- Does no video games, texting, prolonged TV, exercise or anything that causes symptoms to get worse
- Works with the *Concussion Assistance Team* truthfully

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Concussion Assistance Team responsibilities

# Team roles in concussion management (Continued from Page 2)

- Reports any and all signs and symptoms
- If a teammate is the athlete with a concussion, reports any signs or symptoms to a coach, trainer, teacher, school nurse and/or guidance counselor.

## ◆ Team Medical Provider (Physician)

- Provides care for the student athlete
- Works with the Concussion Assistance Team to provide the proper care for the student athlete's recovery
- Serves a vital part of the Concussion Assistance Team but must be willing to work with all parties involved

## ◆ Hospital Medical Provider (Emergency Department)

- Has the parents of a Lancaster County School District student sign the Release of Information form
- Faxes the Suspected Concussion Notification form to the Concussion Assistance Team Coordinator so he/she can provide the necessary information to all parties involved and begin the process for accommodations when the student is able to return to school

# Forms we use to communicate



# with concussion teams

Completed by athlete & parents to assure they understand the dangers of a concussion and what their care responsibilities are

# Assuring REAP in our schools

The REAP program was written by Karen McAvoy, PsyD. of the Rocky Mountain Youth Sports Medicine Institute of Centennial, Colorado

- The program is a multidisciplinary approach to concussion management of students by the Concussion Assistance Team, composed of the sub teams listed on Page 2.
- The team members and their responsibilities will vary at each school depending on personnel at each school.
- Here's how our district plans to assure the REAP program is a living plan to fit our students' needs and fulfill our capabilities as a district.

## ◆ Reduce

- **Reduce** the chance for further injury to the brain by taking the injured student out of play or practice as soon as a school employee observes or receives a report of signs and symptoms of a possible concussion.
- **Remember** that only a medical professional such as a physician or physician assistant can make a medical diagnosis of a concussion,

## ◆ Educate

- The Educate part of REAP consists two segments – **Education and Collaboration.**
- **Education** – knowing the signs and symptoms of a concussion
    - As mentioned above, signs and symptoms occur in four categories, and it is important that all parties involved in recovery and management of the student's concussion know these signs and symptoms and are able to recognize them.
    - As stated before, concussion management is a team approach with many stakeholders, including the Concussion Assistance Team.
  - **Collaboration** – all stakeholders on the same page and communicating effectively with one another.
    - According to the REAP program, it is a "Multi-Disciplinary Team" approach in which team members provide multiple perspectives of the student/athlete and share multiple sources of data to assist in the student/athlete's recovery (McAvoy, 2011).
    - REAP supports the idea that each case is unique and may have different people on the Concussion Assistance Team.

In an ideal setting, the steps below give the flow of concussion management.

but if the possibility of a concussion is suspected or the signs and symptoms of a concussion are observed, every coach, trainer, player, parents or other school employee has the responsibility to pull the player out and recommend to the parent/guardian that the student needs to see an appropriate medical provider for a possible concussion.

### Step 1 Suspected head injury occurs

- Option 1** – If injury is reported to coach
  - » Coach will sit the player out.
  - » Coach will contact parent/guardian and fill out Suspected Head Injury Notification form and give appropriate copy to parent/guardian.
- Option 2** – If injury is reported later to athletic trainer or school nurse
  - » Trainer/nurse will contact parent/guardian and coach of the sport.
  - » Trainer/nurse will fill out Suspected Concussion Notification form and give appropriate copy to parent/guardian.

### Step 2 Medical attention provided to injured student

- Option 1** – If deemed an emergency situation, the player will be transported by EMS to appropriate medical facility and parents/guardian will be notified.

- **Restrict** – The school has the right to hold any student out of games and practices if the student is suspected of having a possible concussion and will hold the player out until cleared by an appropriate medical provider (M.D. D.O., Physician Assistant, Licensed Nurse Practitioner; with training in concussion management), regardless of parental consent to put the student back into games and practices.

**Option 2** – If non-emergent, the student may be transported by parent/guardian to appropriate medical facility.

- Once Emergency Department/Primary Care Physician makes diagnosis, appropriate medical facility will
  - fill out School Notification form (signed by parent giving consent of information) and
  - fax to the Concussion Assistance Team Coordinator.
- Medical Team will evaluate concussion and make recommendations for rest and recovery.
- Emergency Department/Primary Care Physician may make recommendation to Concussion Specialist.
- Family Team will follow medical team's orders for rest and recovery and notify the school of the student's diagnosed concussion.
- Medical Team Coordinator will contact school Concussion Assistance Team coordinator to begin dialogue for student care and possible academic adjustments.

### Step 3 Concussion Assistance Team notified student has concussion

- Concussion Assistance Team coordinator receives notification of student's concussion diagnosis from health care provider and parents/guardian.

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# Assuring REAP in our schools (Continued from Page 3)

- **Concussion Assistance Team** coordinator puts into action REAP program and notifies sub teams.
  - Contact **School Academic Team** and **School Physical Team** about diagnosis and recommendations for treatment and academic adjustments.
  - Contact **Medical Team** to coordinate care for the student.
  - Contact **Family Team** to communicate progress of student.
  - Keep open communication between all four teams to provide the best care and assistance for the student.
- **School Physical Team** and **School Academic Team** work to make adjustments to the student's school day as deemed appropriate by the **Medical Team**.
- **School Physical Team** makes sure student is taken out of physical education/JROTC activities until further notice by **Medical Team**.
- **School Academic Team** makes necessary adjustments to student's academic schedule and workload to provide student with optimal environment for recovery.
- **School Physical Team** and **School Academic Team** communicate with all sub teams on the progress of the student, noting any changes in signs, symptoms, or behaviors in the student.
  - **Teacher Data** form will be filled out either weekly or bi-weekly as deemed by the **Concussion Assistance Team**.
  - **Teacher Data** form will be turned into the **Concussion Assistance Team** coordinator.
  - **Concussion Assistance Team** coordinator will share results with the **Family Team** and **Medical Team**.
- **Medical Team** will communicate and work with all parties of the **Concussion Assistance Team** and advise them on the care of the student.
  - Once symptoms have subsided, **Medical Team** will use data from all teams to help determine when student can start gradual return to activity.
  - Once student is cleared for gradual return to activity, he/she must go through a gradual progression of activity before being allowed to return to full competition.
    - » If at any time student shows signs or symptoms during the gradual return to activity, he/she will return to the previous step until asymptomatic.
    - » Student must complete all progression steps asymptotically before being allowed to return to activity, even with physician's release. For this reason, the release should come from **Medical Team** of the **Concussion Assistance Team**, and all sub teams should communicate during this time.

## ◆ Accommodate

- The **Concussion Assistance Team** members must all communicate with each other about the progress of the student and any adjustments needed for the recovery process.
- It has been documented that most symptoms of a concussion in adolescents last anywhere from 1 to 3 weeks (McAvoy, 2011).
- It is also documented that a CT Scan or MRI cannot diagnose or show a concussion.
  - A CT Scan and MRI can only show if there is a bleed or a structural abnormality of the brain or skull.
  - Concussions are not structural – they are functional, meaning the brain can appear perfectly normal on scans, but functionally the brain is suffering from signs and symptoms.
  - For this reason, it is recommended that the student be treated for a concussion and the necessary adjustments be made to help in recovery as long as the student is symptomatic.
- It is important that while the student is symptomatic, the **Concussion Assistance Team** members

communicate well with each other, noting any signs or symptoms shown by the student.

- The physician will see the student only for an hour or less at a time, once or twice a week.
- Parents will be with the student at home and the School Teams will see the student when he/she returns to school.
- The factors above mean it is essential that all parties communicate with each other regularly to provide the best information and data possible so the best decisions can be made collaboratively on the student's behalf.
- Types of adjustments that may be made for each Team – *These are not all inclusive*

### – Family Team

- » Keep the student home from school the first day or two as recommended by the doctor
- » Make sure the student gets cognitive and physical rest
- » Limit cell phone use/texting
- » No video games, computers, iPads or other electronic devices
- » Limit television

### – Medical Team

- » Recommend cognitive and physical rest
- » May remove from school for first few days
- » May recommend 1/2 days of school concussion signs & symptoms improve
- » Make adjustments to recommendations based on information from **Concussion Assistance Team** members

### – School Academic Team

- » Modify and adjust student's schedule
- » Set up periods of rest for student
- » Limit testing & evaluations
- » Implement gradual return to academics

### – School Physical Team

- » No physical education/JROTC until cleared by physician
- » No practice/play until cleared for gradual return to play by physician
- » Monitor gradual return to play when approved by physician

## ◆ Pace

- Pace ensures gradual and appropriate return to activity for the student.
  - The 2008 Zurich Consensus Statement on Concussions in Sports recommends a "Graduated Return-to-Play," set up in stages.
  - Based on this recommendation, the REAP

program also sets up as part of the gradual return-to-play a gradual return-to-academics as deemed necessary by the medical provider and the **Concussion Assistance Team**.

- The format used in our district Best Practices is adopted from the **Oregon Concussion and Man-**

**agement Program** and **Slocum Sports Concussion Program**.

- Below are charts explaining gradual return to activity – a **Return-to-Academics Progression** chart and a **Return-to-Play Progression** chart.

Steps	Progression	Description
Step 1	Home- Total rest	<ul style="list-style-type: none"> <li>• Stay at home</li> <li>• No driving</li> <li>• No mental exertion – computer, testing, video games, homework</li> </ul>
Step 2	Home – Light mental activity	<ul style="list-style-type: none"> <li>• Stay home</li> <li>• No Driving</li> <li>• Up to 30 minutes mental exertion</li> <li>• No prolonged concentration</li> </ul>
<b>Progress to Step 3 when student handles up to 30 minutes of sustained mental exertion without worsening of symptoms</b>		
Step 3	School – Part time	<ul style="list-style-type: none"> <li>• Provide quiet place for scheduled mental rest</li> <li>• Maximum accommodations</li> <li>• Shortened day/schedule</li> <li>• Built-in breaks</li> <li>• Lunch in quiet environment</li> <li>• No significant classroom or standardized testing</li> <li>• Modify rather than postpone academics</li> <li>• Provide extra time, help &amp; modified assignments</li> </ul>
<b>Progress to Step 4 when student handles 30 – 40 minutes of sustained mental exertion without worsening of symptoms</b>		
Step 4	School – Part time	<ul style="list-style-type: none"> <li>• No standardized testing</li> <li>• Moderate accommodations</li> <li>• Shortened day/schedule</li> <li>• Modified classroom setting</li> <li>• Moderate decrease of extra time, help &amp; modification of assignments</li> </ul>
<b>Progress to Step 5 when student handles 60 minutes of mental exertion without worsening of symptoms</b>		
Step 5	School – Full time	<ul style="list-style-type: none"> <li>• No standardized testing</li> <li>• Minimal accommodations</li> <li>• Continued decrease of extra time, help and modifications of assignments</li> <li>• May require more support in academically challenging subjects</li> </ul>
<b>Progress to Step 6 when student handles all class periods in succession without worsening of symptoms AND receives medical clearance for full return to academics and athletics</b>		
Step 6	School – Full time	<ul style="list-style-type: none"> <li>• Attends all classes</li> <li>• Full Academics</li> <li>• No accommodations</li> <li>• Full homework and testing</li> </ul>
<b>When symptoms continue beyond 3 – 4 weeks, prolonged in-school supports are required.</b>		

Taken from Oregon Concussion Management Program and Slocum Sports Concussion Program (ORCAS 2011).

Return-to-Play Progression	
<p><b>Return-to-activity is a medical decision.</b> To begin the Gradual Return-to-Play plan, the student must</p> <ul style="list-style-type: none"> <li>• be free of all signs and symptoms,</li> <li>• have no academic accommodations in place and</li> <li>• be cleared by a proper health care provider.</li> </ul> <p>If post-concussion signs or symptoms occur at any step, stop the activity &amp; have the <b>Concussion Assistance Team</b> reassess.</p>	
Step 1	<p>No physical activity as long as there are symptoms</p> <p>(Leaving this step could take days or weeks)</p> <p>• Complete physical rest</p>
<b>Progress to Step 2 when CLEARED BY THE MEDICAL PROVIDER and 100% symptom-free for 24 hours.</b>	
Step 2	<p>Light aerobic activity</p> <p>Increase heart rate (light to moderate workout not requiring cognitive attention or high degree of concentration)</p> <ul style="list-style-type: none"> <li>• 10-15 minutes of exercise, no resistance training</li> <li>• Walking</li> <li>• Swimming</li> <li>• Riding an exercise bike</li> </ul>
<b>Progress to Step 3 when symptom-free for 24 hours after Step 2 activities. If symptoms return, go back to Step 2.</b>	
Step 3	<p>Sport-specific exercise</p> <p>20-30 minutes supervised play, low risk activities</p> <ul style="list-style-type: none"> <li>• Running in gym, on the field or on treadmill</li> <li>• No weightlifting</li> <li>• No head impact activities</li> <li>• No helmet or other equipment</li> </ul>
<b>Progress to Step 4 when symptom-free for 24 hours after Step 3 activities. If symptoms return, go back to Step 3.</b>	
Step 4	<p>Non-contact training drills</p> <p>Exercise, coordination (athlete's sport without risk of head injury)</p> <ul style="list-style-type: none"> <li>• Progression to more complex training drills</li> <li>• May start progressive resistance training</li> <li>• May run/jump as tolerated</li> <li>• Non-contact training drills in full equipment</li> </ul>
<b>Progress to Step 5 when symptom-free for 24 hours after Step 4 activities. If symptoms return, go back to Step 4.</b>	
Step 5	<p>Full-Contact Practice</p> <p>Minimal accommodations after medical clearance</p> <ul style="list-style-type: none"> <li>• Normal training activities, under adult supervision</li> <li>• Full contact practice or training</li> </ul>
<b>Progress to Step 6 when CLEARED BY THE MEDICAL PROVIDER. If symptoms return, go back to Step 5 and contact medical provider.</b>	
Step 6	<p>Return to play</p> <p>Normal game play</p> <ul style="list-style-type: none"> <li>• No restrictions</li> </ul>

Recommendations from 2008 Zurich Consensus Statement on Concussions – Journal of Clinical Neuroscience 16 (2009) 755 – 763  
Taken from the Oregon Concussion and Management Program and Slocum Sports Concussion Program (ORCAS, 2011)

## Acknowledgements

We would like to take the opportunity to thank several people and organizations for helping us with this body of work. We plan for it to be a living document open for revision and change as deemed necessary.

- **Karen McAvoy, PsyD** – Karen is the director of the concussion center at the **Rocky Mountain Youth Sports Medicine Center**, Denver, CO. She is the author of the REAP Project, which has been an invaluable resource to us. Karen has also been invaluable to us in this process. We have communicated with her through email, talked to her face to face, and she has sent us numerous resources to help us begin this program. She will continue to be a resource for us as we progress through this ongoing process. Without her help, we would still be looking for directions.
- **The Brain Injury Association of South Carolina** – We would like to thank Joyce Davis of the BIA of SC. She has been very receptive to our policy and very helpful in helping us learn about other concussion policies in South Carolina, as well as keeping us up to date on concussion legislation.
- **The Brain Injury Association of West Virginia** – Mike Davis of the BIA of WV sponsored a Concussion Seminar in Charleston West Virginia in March of 2012. We were able to attend this two-day seminar and came away with a wealth of knowledge and questions. We were able to meet Karen McAvoy there as she was one of the speakers. It was a great conference and was vital in helping to springboard our policy into place.
- **Oregon Concussion and Management Program** – This guide from the state of Oregon includes the state concussion law (Max's Law) and Best Practices. It is a guide for school administrators and was an invaluable tool for developing our own policy and best practices guide. It was published in 2011 and includes great current practices for schools dealing with students with concussions. We modeled a lot of our best practice guides from this guide as well as in conjunction with Colorado's REAP Project.

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