

## The Oregon Concussion Awareness and Management Program: Interdisciplinary state level guidance in concussion management

The Oregon Concussion Awareness and Management Program (OCAMP) was created to develop and implement protocols for effective concussion education and management for high school athletes, administrators, coaches, and medical providers across the state of Oregon. OCAMP's efforts were catalyzed by an increasing recognition by the Oregon School Activities Association (OSAA) and the Oregon Department of Education (ODE) that schools needed to better manage concussion from identification of the initial injury through return to academics and play.

### **History**

In the spring of 2007, Bill Bowers, a former Oregon high school coach and athletic director, approached Dr. Michael Koester to discuss ways to improve concussion management in high schools across the state. Bowers had already discussed the subject with local and national colleagues after an athlete he was coaching suffered a catastrophic head injury. His interest was further piqued by what was then newly increased attention given to concussions in the National Football League (NFL). Importantly, Mr. Bowers was also the president of the Oregon Athletic Directors Association.

At that time, Dr. Koester was a member of the OSAA's Medical Aspect of Sports Committee. Under the leadership of Thad Stanford, MD, JD, the OSAA was the first state high school athletic association in the United States to have a medical advisory committee, which formed in the mid-1970's.

### **OSAA Return To Play Rule**

Media attention on the NFL put a spotlight on concussion in high school athletics. Two administrative rule changes put into place at the end of the past decade increased the recognition of concussions in Oregon high school athletes. Based on emerging evidence that concussion symptoms could evolve over a few days following injury (Lovell, Collins, Iverson, Johnston & Bradley, 2004), in 2008 the OSAA Sports Medicine Advisory Committee put a rule into effect that an athlete could not return to play in a game following a suspected concussion. At the time, the standard for management was to allow a player to return to the game if symptoms resolved within 15 minutes of the injury. The committee's new rule formed the basis of Max's Law, Oregon's first concussion law (see below).

In 2010, the National Federation of State High School Associations, which is responsible for writing the rules under which U.S. high school sports are played, followed Oregon's lead and placed the recommendation into all sports' rule books that athletes not be allowed to return to play the same day they experienced a concussion. The rules books that year also included the specific instruction to game officials that any athlete who suffered the "signs, symptoms, or behaviors consistent with a concussion" should be removed from play and further evaluated on the sideline.

## **Oregon Concussion Laws**

In 2009, Oregon's legislature passed one of the first bills in the nation to address the issue of proper concussion management in high school athletics. The bill, Max's Law, was named after Max Conradt, a quarterback for Waldport (Oregon) High School's football team. Max suffered a concussion during a game and was nonetheless allowed to play the following Friday even though he had not recovered from the previous concussion. During that next game, he suffered a second injury, resulting in a permanent debilitating brain injury. Max's Law was signed by Oregon's governor shortly after a similar bill (Lystedt Law) was signed into law in the state of Washington (<http://apps.leg.wa.gov/rcw/default.aspx?cite=28A.600.190>).

Per the text of Max's Law, any athlete on a high school athletic team who suffers a blow to the head or body and then exhibits signs and symptoms consistent with a concussion must be immediately removed from the game or practice and not allowed to return to play until s/he is cleared to do so by a qualified health care professional. The law also requires all high school athletic coaches to complete annual concussion education training.

Max's Law covered only high school athletics, which meant that it did not cover the many young athletes in Oregon who play non-high-school sports. To remedy that situation, in 2014 Oregon's legislature passed Jenna's Law, which extends the concussion protocols to all youth sports leagues within the state. Named after Jenna Sneva, a champion skier who sustained numerous concussions in club skiing, Jenna's Law goes further than Max's Law. It requires all coaches, parents, referees, and players over the age of twelve to receive annual concussion training. Both laws have been instrumental in ensuring that policies and procedures are in place to protect Oregon's young athletes; in providing training to coaches, players, parents, and referees; in tracking and restricting play when a concussion is suspected; and in ensuring good concussion management practices through the dissemination of educational materials and programs. All of Oregon's young athletes have benefited as a result.

## **OCAMP Efforts**

Following the passage of Max's and Jenna's Laws, OCAMP members developed policy and practice guidelines for implementation of the laws. In regular meetings over a 3-year period, the group developed and disseminated 2 sets of best practice concussion management guidelines. The [Max's Law: Concussion Management Implementation Guide](#) provided school administrators with information and resources about concussion, concussion management, and sample school policies. The guide was published on the [OCAMP website](#) and was also distributed in print form to every Oregon high school by the primary education insurance provider, [Property and Casualty Coverage for Educators](#). With the passage of Jenna's Law in 2014, members of OCAMP developed a second guide for implementation of both Max's and Jenna's Laws. Both guides are available on the [OCAMP website](#), which provides current information about concussion management for school administrators, directors of youth sports organizations, youth, parents, educators, and coaches. Using as a foundation available best practice guidelines (e.g., Gioia, Glang, Hooper & Eagan-Brown, 2015; Halstead, McAvoy,

Devore, et al., 2013; Sady, Vaughan & Gioia, 2011), the website offers practical tools and strategies for post-concussion management on the field and in the classroom. During this period, OCAMP members presented information about Max's Law throughout the state, including trainings for educators, medical providers, and athletics personnel. In addition, OCAMP members were involved with research efforts to develop evidence-based concussion education materials (Glang, Koester, Vondy Beaver, Clay & McLaughlin, 2010; Glang, Koester, Chesnutt et al., 2015).

Since its inception, OCAMP has worked closely with the OSAA, high schools, athletic trainers, and medical providers to support the safe return to play of student athletes following concussion. OCAMP has also collaborated with the ODE's [Traumatic Brain Injury Educational Consulting Teams](#) on seamless return to school activities for students. This team of statewide educators works with local schools to support all students with brain injury, including concussion. The team offers training, resources, and consultation to any school at no charge. Nine TBI liaisons meet regularly to gather new information about strategies for supporting students with brain injuries across the injury severity spectrum; the liaisons then share this information with team members in local school districts. Building on the TBI Team's structure allows OCAMP's efforts to rapidly extend statewide. When new resources become available, the TBI Team network provides a quick and efficient dissemination mechanism. Questions from educators about return to school are answered efficiently, and peer networking about best practices occurs regularly.

The OCAMP approach to providing guidance and support in implementing an evidence-based concussion management approach is grounded on the literature on effecting change in the school setting (Sugai & Horner, 2009) and the collective experience of OCAMP members in promoting best practices in educational, athletic and medical settings. OCAMP's success can be attributed in part to the multidisciplinary participation of all key stakeholder groups involved in concussion management: OSAA, Oregon Athletic Directors Association, Oregon Athletic Coaches Association, ODE, Oregon Athletic Trainers' Society, and Property and Casualty Coverage for Education, the leading provider of liability insurance for schools in Oregon.

### **Future Activities**

OCAMP plans to continue focusing on improving concussion education and management policies and practices for all Oregon student athletes through the following initiatives:

1. *Promote best practices for student athletes' return to full school activity.* Each high school should have a written concussion management policy and a formalized Concussion Management Team with a designated leader. The task of the team is to track each student who has sustained a concussion and manage his/her re-entry into school and sports. In addition, the team facilitates more formalized supports such as 504 plans and Individual Education Plans for students who need them.

2. *Provide training for educators on managing concussion in the classroom.* OCAMP and the TBI Teams provide school-based trainings and resources for educators to allow them to better work with students who have sustained concussions. The video, text, and graphic resources are available on the [OCAMP website](#).

3. *Support youth sports organizations in implementing best practices in concussion management.* This support includes training, resources, and guidance on best practices in managing concussion.

<b>Year</b>	<b>Goal</b>	<b>Activity</b>
2010	Disseminate information about Max's Law	Developed guidebook, Max's Law: Concussion Management Implementation Guide; distributed to all Oregon high schools
2011	Provide tools and resources for concussion management in the school setting	Developed OCAMP.org
2011-2014	Disseminate best practice concussion management guidelines	Presentations by OCAMP members to educators, physician groups, athletics staff and athletic trainers about Max's Law
2012, 2014	Provide forum for dissemination and discussion of evidence-based concussion management	Co-sponsor statewide conference on youth concussion
2014	Disseminate information about Jenna's Law	Revised OCAMP.org to include online guidebook for implementation of both Max's and Jenna's Laws
2016	Provide training, support and resources for Oregon schools on return to school activities post-concussion	Refine OCAMP.org, hold regional trainings in conjunction with TBI Consulting team
2016	Support youth sports in implementing best practices concussion management	Maintain OCAMP.org; conduct outreach to youth sports organizations

Table 1. OCAMP initiatives

## **Conclusion**

Returning to school following concussion presents unique challenges. Although Oregon was one of the first states in the country to pass laws about managing sports concussion, dissemination and implementation of those laws has taken a concerted effort by OCAMP and its partners across the state. OCAMP must now focus on developing clear state and local policies that support the academic return of all students with concussion. Until a stronger evidence base can be built, recent consensus guidelines can offer specific best practices that school districts can implement (Gioia et al., 2015). Funding by both state and private agencies to address those

recommendations will be needed. We believe the efforts by OCAMP and its state partners have provided a constructive framework for supporting student athletes after concussion.

Lovell MR, Collins MW, Iverson GL, Johnston KM, Bradley JP (2004). Grade 1 or "ding" concussions in high school athletes. *Am J Sports Med.* Jan-Feb;32(1):47.

Gioia, G., Glang, A., Hooper, S., Eagan Brown, B. (2015). Building statewide infrastructure for the academic support of students with mild traumatic brain injury. *J Head Trauma Rehabil.* doi: 10.1097/HTR.000000000000205.

Glang, A., Koester, M., Chesnutt, J., Gioia, G., McAvoy, K., Marshall, S., Gau, J. (2015). The effectiveness of a web-based resource in improving post-concussion management in high schools. *Journal of Adolescent Health, 56, (1), 91–97.*

Glang, A. Koester, M., Vondy Beaver, S., Clay, J & McLaughlin, K. (2010). Online training in sports concussion for youth sports coaches. *International Journal of Sports Science and Coaching, (5)1, 1-11.*

Halstead ME, McAvoy K, Devore CD, Carl R, Lee M, Logan K. (2013). Returning to learning following a concussion. *Pediatrics, 132(5):948-957.*

Sady, M. Vaughan, C., & Gioia, G. (2011). School and the concussed youth: Recommendations for concussion education and management. *Phys. Med. Rehabil. Clin. N. Am. 22(4), 701-719.*

Sugai, G., & Horner, R. H. (2009). Defining and describing schoolwide positive behavior support. In W. Sailor, G. Dunlap, G. Sugai, & R. Horner (Eds.), *Handbook of Positive Behavior Support* (pp. 307-326). New York, NY: Springer.