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CONCUSSION RECOGNITION, MANAGEMENT, AND PREVENTION IN YMCA PROGRAMS

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Links of Interest

www.cdc.gov/concussion/sports/recognize.html For a list of signs and symptoms from the U.S. Centers for Disease Control and Prevention (CDC).

www.cdc.gov/concussion/HeadsUp/online_training.html For the CDC's free online training for coaches and parents regarding concussions.

www.cdc.gov/concussion/sports/resources.html#3 For free concussion educational materials from the CDC.

Statement of the YMCA of the USA Health, Risk, and Safety Advisory Committee (HRSAC)

DEFINITION OF CONCUSSION

A concussion is a brain injury caused by an impact to the head, or an impact to the body that transmits a jolt to the head, resulting in a transient disturbance of brain function. A concussion is not a structural injury (e.g., bruise, contusion, bleed), thus it cannot be seen on medical brain imaging tests such as MRIs and CT scans.

CONCUSSION RATES

The number of children visiting the emergency department (ED) for concussion is on the rise. A study published in the journal *Pediatrics* found that 50 percent of pediatric concussions seen in the ED were sport-related, and younger children, between the ages of 8 and 13 years, accounted for 40 percent of the sport-related concussions in the ED. Another striking finding from this report was that between 1997 and 2007 the number of visits to the ED for sport-related concussions in organized team sports increased significantly despite an overall decrease in sport participation among youth ages 7 to 17 years. Specifically, ED visits for sport-related concussions doubled among 8- to 13-year-old children and increased by more than 200 percent among the 14- to 19-year-old group. (Bakhos et al. 2010)

CONCUSSION RISKS UNIQUE TO CHILDREN AND ADOLESCENTS

Sport-related concussions pose a unique risk to the pediatric population. Children and adolescents are still undergoing a significant period of brain development and thus are even more susceptible than adults to the damaging effects of a concussion. Medical research over the last decade has provided more information about sports-related concussions. We have learned that concussion is not a condition that can just be “toughed out” but rather a serious medical injury of unique concern to children and adolescents. Concussions can cause symptoms that interfere with children’s school performance, social and family relationships, and participation in sports.

SIGNS AND SYMPTOMS

The signs and symptoms of concussion fall into four broad categories: physical, cognitive, emotional, and sleep-related. A person suffering from a concussion may have one or more of the following signs and symptoms:

- **Physical:** headache, dizziness, nausea, vomiting, balance problems, fatigue, sensitivity to light and/or noise, visual problems, feeling dazed or stunned, loss of consciousness, and seizure-type movements.
- **Cognitive:** feeling “foggy,” feeling mentally slow, poor concentration, poor memory, repeating questions, answering questions slowly, and confusion about recent events.
- **Emotional:** feeling irritable, sad, emotional, or nervous/anxious.
- **Sleep-related:** drowsiness, sleeping more or less than usual, inability to fall asleep, and waking frequently during the night.

Headache is the most frequently reported concussion symptom, occurring in approximately 75 percent of concussions. Loss of consciousness is not required for the diagnosis of concussion and, in fact, occurs in fewer than 10 percent of concussions. It is possible that symptoms of concussion may not appear until several hours after the initial injury. The signs and symptoms of a concussion typically resolve in 7 to 10 days in the majority of cases; however, for some children and adolescents, recovery may take weeks or months. In approximately 10 percent of concussions, symptoms persist beyond 6 weeks. This is called post-concussion syndrome.

Children and adolescents with a concussion who return to play before they have completely recovered are at risk for prolonging their symptoms, and if they sustain another blow to the head before recovery is complete they are at risk for permanent or even fatal brain injury. As a result, the most current medical guidelines are very clear that children and adolescents with concussions may not be cleared to return to play until all signs and symptoms of concussion have resolved.

TREATMENT

Management of a concussion includes complete rest from physical and cognitive activities until symptoms resolve. Avoiding stimulating environments and limiting “screen time” (i.e., using computers, video games, television, mobile devices) is also important. Over-the-counter pain relievers are typically not effective for concussion headaches and are not recommended. Resting in a quiet, dark room is usually the most effective treatment for a concussion headache. Management of post-concussion syndrome may include medications to address headache, sleep problems, or concentration; vestibular therapy to help with symptoms of dizziness and balance disturbance; and/or other types of emotional or psychological support.

PREVENTION

The brain cannot be conditioned to withstand injury, therefore there is no form of physical or cognitive training that will prevent concussions. Research has shown these to be the most effective means of reducing the risk for concussion:

- Modifications to protective gear
- Rule changes
- Identifying athletes at risk
- Educating everyone involved with youth activities about the dangers of concussions and how to recognize signs and symptoms

Concerning protective gear, mouth guards have been shown to reduce dental trauma, but no studies have conclusively shown that they protect against concussions. Helmets have been shown to reduce impact forces to the head; however reduction in concussion incidence has not been consistently demonstrated. Helmets are required by certain sports (football, hockey, lacrosse, etc.), and recommended for many activities (skateboarding, skiing, bicycling, etc.) and these should meet the requirements of the National Operating Committee on Standards for Athletic Equipment and should be appropriately fit for each individual athlete. Soccer headgear is now being marketed; however, research to demonstrate its effectiveness in reducing concussions is limited.

CHALLENGES OF CONCUSSION RECOGNITION AND MANAGEMENT IN YOUNG PEOPLE

Unfortunately, children, adolescents, coaches, and parents/guardians may not be able to recognize the signs and symptoms of concussion and may not fully understand the importance of waiting to return to play until the full resolution of symptoms. Several factors can complicate the recognition of concussion in children and adolescents. Many of the signs and symptoms of a concussion overlap with other medical conditions. For example, some concussion symptoms are similar to depression, anxiety, and attention-deficit disorders.

Young people may not recognize that they have concussion symptoms because of poor understanding of the condition or from cognitive impairment due to the injury itself. Additionally, children and adolescents may not be forthcoming with their concussion symptoms for fear of being restricted from school or further sports participation. For all of these reasons, it is imperative that any child or adolescent displaying signs and symptoms of concussion be evaluated by a health care provider trained to manage concussions before being allowed to return to sports or activities.

AMERICAN ACADEMY OF PEDIATRICS' RECOMMENDATIONS

In 2011, the American Academy of Pediatrics published a comprehensive clinical report on the management of concussions in children and adolescents. The most important points from this report are as follows:

- Children and adolescents should never return to play while symptomatic at rest or with exertion.
- Children and adolescents also should not be returned to play on the same day of the concussion, even if they become asymptomatic.
- The recovery course is longer for children and adolescents than for people who are college-age and older, and a more conservative approach to return to play is warranted for this younger age group.

- Any child or adolescent sustaining a concussion should be evaluated by a qualified health care professional, ideally a physician, with experience in concussion management, and should receive written medical clearance before returning to play.

STATE LEGISLATION

Many states now have laws to protect young athletes at risk for concussions, and there is likelihood that all states will have some kind of legislation in the very near future. Laws vary by state and it is imperative that Y staff are up to date on all aspects of their latest state laws. These laws require that any athlete suspected of having a concussion be removed from play and not allowed to return until evaluated and given written clearance from a qualified health care professional. Which health care professionals are qualified varies by state. These laws typically require schools to provide concussion-education materials to athletes and parents/guardians prior to participation in sports, with some requiring parents/guardians to sign an informed-consent form acknowledging that they understand the dangers of concussions. Some laws require all youth sport coaches (paid and volunteer) to be trained in concussion prevention, identification, and management.

YMCA OF USA's RECOMMENDATIONS

The YMCA of the USA Health, Risk, and Safety Advisory Committee supports the recommendations from the American Academy of Pediatrics, and recommends the following:

- All YMCAs comply with their state laws regarding concussion management.
- Any participant in a YMCA physical activity program who is suspected of having a concussion should be removed from the program and may not return until evaluated by and given written clearance from a qualified health care professional.
- YMCA staff involved in supervising physical activity programs should be trained to recognize the signs and symptoms of a concussion.
- All Y coaches and leaders of physical activities involving children should be trained about concussions.
- Parents and guardians registering a child for a YMCA physical activity program should be given concussion-education materials and should provide written confirmation that the child is free of injury before beginning the program.

REFERENCES

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Halstead, M. E., K. D. Walter, and the Council on Sports Medicine and Fitness. American Academy of Pediatrics. "Clinical Report: Sport-related Concussion in Children and Adolescents." *Pediatrics*. 2010;126(3):597-615.

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