



Brain Injury Alliance

NEW JERSEY

732-745-0200

Helpline: 1-800-669-4323

www.bianj.org

No Brain Injury is
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A Parent's Guide to Choosing a Sports Concussion Specialist

Brain Injury Alliance of New Jersey Concussion in Youth Sports Committee

The following is a guideline for parents to use when choosing a sports concussion specialist for the treatment and management of their child's concussion. With the passage of the New Jersey Concussion Law (NJSA 18A: 40-41.5) on December 7, 2010, it is mandated that a student athlete, who has sustained a concussion while participating in interscholastic sports, obtain a medical evaluation and written clearance by a physician or other licensed health care provider trained in the evaluation and management of concussion before returning to sports activity. This article will provide the information and tools to understand the need for appropriate management of concussion and assist in choosing a concussion specialist.

Things to know to be an effective parent advocate

Become educated about concussion

The Centers for Disease Control and Prevention (CDC) define a concussion as a type of traumatic brain injury, or TBI, caused by a bump, blow, or jolt to the head that can change the way your brain normally works.

Concussions can also occur from a fall or a blow to the body that causes the head and brain to move quickly back and forth. Health care professionals may describe a concussion as a "mild" brain injury because concussions are usually not life-threatening if properly managed. Even so, their effects can be serious.

Symptoms can be physical, cognitive, and emotional. Some symptoms may include headache, balance issues, nausea, confusion, slowed reaction time, irritability, and anxiety amongst others. It's a good idea as a parent to help the athlete keep a daily log of their symptoms and rate the severity each day following the injury and bring this information to the doctor.

After an athlete has a concussion, the brain needs time to heal. A repeat concussion that occurs before the brain recovers from the first- usually within a short time period of hours, days, weeks - can slow recovery or increase the chances for long term problems. In some circumstances, there have been cases of more catastrophic neurological consequences after a repeat hit. Poor medical management can have physical, intellectual, emotional and social effects on the athlete.

Monitor your child closely

The NJ Concussion Law requires that if a student athlete sustains or is even suspected of having sustained a concussion while playing in a game or practice, the athlete must be immediately removed from play and should



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not return to sports activity for the remainder of the day. Following removal from play, the athlete must be evaluated by a healthcare provider if available at the school or an urgent referral should be arranged. Immediate removal from play is important, even if the athlete feels better on the sideline, because symptoms may often not fully manifest until hours or days after the incident.

If your child is diagnosed with a concussion, it is very important to follow the physician's recommendations and monitor your child for worsening symptoms in the hours and days that follow. For example, if they start vomiting, become irritable, anxious, depressed, or have difficulty sleeping, this may be a sign of more severe injury and further medical evaluation is necessary. You should call 911 or take your child to an emergency room immediately.

Younger athletes will often lack the ability to explain any symptoms they are experiencing following a concussion. Elementary school-aged children may be more likely to complain of physical symptoms or behaviorally act out in response to their symptoms. Middle school-aged children may be more likely to minimize their symptoms in an attempt to not stand out and appear different from their peers. Therefore, a more conservative approach is typically taken in the management and treatment of a concussion in younger children.

Contact your insurance company

Speak with your insurance company about primary care doctor visits and sub-specialist visits in the event further consultation, testing, or treatment with a specialist is needed (ex: neuropsychologist, neurologist). At this time, most insurance plans do not cover pre-season baseline testing (described in this article under **Testing**), as these are considered "well visits." Check with your child's school to see if they conduct baseline testing of their athletes. Some health care providers will take out-of-pocket payment for an athlete to be baseline tested or charge a nominal fee for groups to be tested.

Defining the roles of concussion professionals

According to the 4th International Consensus Conference on Concussion in Sport, the ideal concussion management program is collaborative and includes multiple health care providers. Sometimes you may not find all of these concussion services in one place; in that case you may need to engage multiple providers, and will need to make sure that the providers you engage are very willing to communicate and coordinate with each other, and with the school. You will also be looking for concussion providers who can see the athlete in a timely fashion, within days of the concussion, and



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be able to continue following them closely in the weeks following the concussion.

The following is a list of different professionals who may be involved in the management of your child's concussion:

Within the school environment:

Certified Athletic Trainer (ATC).

A Certified Athletic Trainer is a health care professional who works under the direction/supervision of a licensed physician to provide health care to athletes. Athletic trainers provide on-site evaluation and treatment for the injured athlete, immediate first aid care, follow-up rehabilitation care, and specific conditioning programs for injury prevention. The Certified Athletic Trainer is often the first professional to see the concussed athlete from the sidelines and remove him or her from play. The Certified Athletic Trainer will often make the call if paramedics are needed in more serious injuries. Importantly, athletic trainers are often the individuals who will perform physical exertional testing and the graduated return to play protocol prior to the athlete receiving clearance to return to sports.

School Nurse

The school nurse is the point person during school hours when injuries occur in sports as well as in physical education classes and recess. The school nurse can help monitor the athlete's symptoms and recovery as well as provide a place for athletes to go for a rest break. If the athlete has been prescribed medications by a doctor, the school nurse will help manage the medications while the athlete is in school.

Outside the school environment:

Physician (MD or DO)

Any child who has sustained a suspected concussion will need to be examined by the family primary care doctor, pediatrician, or an ER physician to rule out a more serious injury and to manage a concussion.

Neurologist (MD or DO)

A neurologist is a physician who specializes in diseases and disorders of the nervous system. A neurological evaluation may be requested when the athlete has persistent symptoms of concussion that do not go away. Neurologists can assist with headache, cognitive slowness, and sleep disturbance and may use different medications to treat concussion effects. Neurologists



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may conduct further tests, such as an EEG to examine brain wave functions.

Neuropsychologist (PhD or PsyD)

A neuropsychologist is a licensed psychologist who specializes in how brain structures and systems affect cognition (thought), emotions, and behavior. Brain function is evaluated by testing cognitive and thinking skills such as verbal and visual memory, processing speed, attention span and reaction time. They are skilled in interpretation and in understanding of baseline and post-concussion neurocognitive testing and in understanding how other conditions (like attention and learning disorders) may affect recovery. A neuropsychologist may provide treatments like cognitive rehabilitation or psychotherapy. A neuropsychologist may be involved with the athlete to assist in developing a plan of academic accommodations while healing takes place, as well as to provide counseling and psychotherapy to address emotional and behavioral symptoms and social adjustment issues.

Neuro-optometrist (OD)

A neuro-optometrist is a licensed optometrist with special training in testing and therapy for neurological dysfunction that affects the visual system. A neuro-optometrist can address problems such as blurred or double vision, non-vestibular balance or orientation problems, reading difficulties, visual attention deficits, or visual memory deficits.

Physician's Assistant (PA)

A physician's assistant is a healthcare professional who practices medicine under the supervision of a medical doctor. Similar to a medical doctor, your child may be examined and managed by a PA.

Nurse Practitioner (NP)

Nurse practitioners are registered nurses with advanced educational and clinical training who provide acute and preventative health care services. NPs may also examine and treat conditions such as concussion. NPs practice independently or in collaboration with a physician and may prescribe most medications.

Physical Therapist (PT)

A physical therapist treats muscular and skeletal issues and may be involved if the athlete is experiencing dizziness or balance problems as well as pain from a neck injury (if one occurred at the time of the concussive event). PTs may provide treatment such as



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vestibular physical therapy to address issues with dizziness and balance as well as exercises to recondition the athlete.

Testing

Computerized Neurocognitive testing – Baseline and Post-concussion

Computerized neurocognitive testing evaluates skills that are most often affected by concussion, such as verbal and visual memory, visual motor speed (speed of visual processing) and reaction time. Baseline testing is administered prior to an athletic season since its purpose is not to diagnose a concussion but to report how an athlete scores with an uninjured brain. Following a concussion, these tests should be re-administered and the scores compared to the baseline scores to help track the extent of functional impairment and monitor the progress of recovery. These tests are just one tool that can be used to help make return to play decisions. There are a variety of tests on the market such as ImPACT, Headminder, Axon, CNS Vital Signs, CogSport, and ANAM. Administration may take 20 to 30 minutes. The computerized versions are currently used for ages 10 and up. However, young athletes in the 10-12 or so age range will need extra guidance and attention to be sure they understand instructions.

**Be aware that different testing programs have different guidelines for appropriate use. For example, a program may only be approved for use with athletes within a certain age range. Check to be sure that baseline test scores have been reviewed for validity.*

Exertional Testing

Once an athlete is symptom free while at physical, cognitive (mental), and social rest and neurocognitive testing indicates the athlete's performance is back to baseline or better, the athlete should start undergoing exertional testing to determine if the athlete is symptom free when physically stressed. Exertional testing should be done under the supervision of the certified athletic trainer or another sports medicine health care provider. Physical activity levels should be increased gradually in a step-wise process following a graduated return to play protocol. If at any point, the athlete experiences symptoms again, they should return to physical, cognitive (mental), and social rest for another day or two and return to the previous level of activity that caused no symptoms.

(See "Graduated Return to Play Protocol" below)

Neuropsychological Testing

Formal neuropsychological consultation may be recommended when the athlete's symptoms persist. A neuropsychological evaluation can help determine which functions of the brain have been disrupted and what these changes mean in the person's day-to-day life functioning. A



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neuropsychologist can provide a treatment plan with recommendations to assist the patient in his or her recovery. If the patient's symptoms do not resolve, and a post-concussion syndrome is diagnosed, more comprehensive testing may be recommended to determine any residual, enduring effects from the concussion.

Neuroimaging

In cases where the patient is not recovering as expected, neuroimaging tests including a CT scan or MRI may be ordered by the treating physician or neurologist. The purpose of these tests is to rule out a brain bleed, skull fracture, or other brain disease. Emergency department physicians are cautious about exposing children to radiation and will typically request a CT scan only in cases of possible deteriorating neurological functioning, which is not the case in concussion. Neuroimaging testing may also be ordered for the athlete when symptoms such as a headache persist. Neurologists are trained in the management of headaches through medical treatment.

Neuro-optometric Testing

Neuro-optometric testing is recommended when the athlete's acute medical management is completed but symptoms such as imbalance, visual confusion, or reading difficulty following the concussion persist. Neuro-optometric evaluation will generally include tests for eye coordination, focusing, and eye movements, as well as visual ego-center, visual spatial perception, and visual memory.

Treatments

The cornerstone of concussion management and treatment is physical, cognitive (mental), and social rest until symptoms resolve. Other forms of treatment in concussion are ever-evolving with more and more research. Many of the following treatments you might hear about are not often prescribed unless symptoms are persisting.

Cognitive Rehabilitation

Cognitive rehabilitation is a type of therapy to target cognitive impairments such as attention and concentration challenges. This therapy works to improve one's ability to perform the impaired function through therapy and practice as well as help to develop strategies to compensate for any continuing impairments.

Medication

Pharmacological intervention is not commonly prescribed in most cases of concussion as symptoms typically resolve themselves with physical, cognitive (mental), and social rest. There is no known medication that "cures" the concussion itself, but medications may be prescribed to treat



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lingering symptoms such as headaches, depression, anxiety, sleep difficulties and mental foginess.

Biofeedback

Biofeedback as an alternative treatment often used for persistent headaches. With biofeedback, the patient is connected to electrical sensors that help the patient receive and measure information about their body. A trained professional teaches the patient how to make subtle changes to their body to reduce the pain.

Vision Rehabilitation Therapy

Neuro-optometrists offer vision rehabilitation therapy and/or use special lenses or prisms in glasses to relieve symptoms originating in the visual system. Symptoms may include sensitivity to light (photophobia), leaning or veering during mobility, balance problems without vertigo, visually related headache, or reading difficulties that began at the time of the concussion.

Vestibular and balance treatment

Vestibular therapy may be prescribed when the athlete experiences balance problems that persist after the concussion. Symptoms can include dizziness and feelings of vertigo.

Psychotherapy/counseling

When symptoms of a concussion do not resolve completely, athletes may be affected emotionally as they try to handle the new challenges they face in daily life. Psychotherapy can be beneficial in helping the athlete learn coping strategies to deal with the demands and pressures he or she faces.

Return to Play

Who clears to play?

New Jersey Concussion Law mandates that a student athlete obtain a medical evaluation and written clearance by a physician or other licensed health care provider trained in the evaluation and management of concussion before returning to sports activity. For the purposes of treatment of concussion/mild traumatic brain injury, the Brain Injury Alliance of New Jersey recommends the following definition of a “concussion specialist:”

A Concussion Specialist is:

1. A licensed health care professional who provides direct patient care;
2. Who has at least one year of continuous, regular experience in the identification, management, and treatment of concussion/mild traumatic brain injury;
3. Who has completed formal didactic coursework/training in concussion/mild traumatic brain injury;



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4. Who is knowledgeable of the latest national or international guidelines regarding the identification, management, and treatment of concussion/mild traumatic brain injury (such as the International Consensus Conferences on Concussion in Sport, American Academy of Pediatrics, American Medical Society for Sports Medicine, American Academy of Neurology); and

5. Who regularly communicates with other concussion specialists to coordinate the health care and well-being of patients with concussion/mild traumatic brain injury.

Graduated Return to Play Protocol

Once the athlete is evaluated by a physician or other licensed health care provider trained in the evaluation and management of concussion, the athlete must receive written clearance by this health care professional to return to play. While the NJ Concussion Law requires written clearance to return to play, it is understood that following medical clearance, the student athlete should complete the Graduated Return to Play Protocol.

The graduated return to play protocol (RTP) is a stepwise process. The athlete should proceed to each next stage only if symptom-free at the current stage. Generally, each step should take at least 24 hours. If any symptoms return while at any point in this stepwise program, the athlete should start back at the previous stage and continue after 24 hours again without symptoms.

Recent preliminary research findings are suggesting that youth may need to take even longer periods of rest. As a precautionary measure, it is commonly recommended that younger children (grades K-8) take at least an additional 7 day rest/recovery period after they are symptom-free before beginning the Graduated Return to Play Protocol. Since all concussions are unique, it is advised to consult with the licensed healthcare provider trained in the evaluation and management of concussion for the most appropriate medical care.

The following details each rehabilitation stage as outlined by the 4th International Conference on Concussion in Sport Consensus Statement (2012):

1. No activity – Complete physical and cognitive (mental) rest; when symptom-free and able to endure a full normal day of school.
2. Light aerobic exercise – Walking, swimming or stationary cycling keeping intensity less than 70% of maximum predicted heart rate for 20 minutes. No resistance training.
3. Sport-specific exercise – Ex: Skating drill in ice hockey, running drills in soccer. No head impact activities.



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4. Non-contact training drills – Progression to more complex training drills. Ex: passing drills in football and ice hockey. May start progressive resistance training.

5. Full contact practice – Medical clearance is required at this step; following medical clearance, may participate in normal training activities.

6. Return to play – Normal game play.

Conclusion

As a parent, you know your child best and will recognize when things are not going well with their recovery. If you have questions and concerns, it is imperative to bring them up with your child's physician and the other members of the treatment team. It is better to miss a game or two, then to jeopardize your child's health. If you would like to learn more about concussion and concussion management, the following are some helpful resources:

Resources- Concussion Training Courses

- *Concussion Wise*
www.concussionwise.com
Provides online educational training programs catered to different individuals and professionals involved in managing concussion including parents, athletes, coaches, nurses, athletic trainers and more.
- *Centers for Disease Control- Heads Up*
<http://www.cdc.gov/concussion/HeadsUp/youth.html>
The CDC's Heads Up initiative provides information about concussion for athletes, parents, and coaches. A free online training for coaches is also available.
- *National Federation of State High School Associations*
<http://www.nfhslearn.com/electiveDetail.aspx?courseID=38000>
Information and resources including a free educational course for coaches, officials, parents, and athletes on the importance of proper concussion recognition and management in high school sports.

Resources- Informational websites

- American Academy of Neurology (aan.com)
- American Academy of Pediatrics (aap.org)
- American College of Sports Medicine (acsm.org)
- American Medical Society for Sports Medicine (amssm.org)
- Athletic Trainers' Society of New Jersey (atsnj.org)
- Brain Injury Alliance of New Jersey (bianj.org)



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- Brain Injury Alliance of New Jersey – Sports Concussion (sportsconcussion.com)
 - The Centers for Disease Control and Prevention (cdc.gov)
 - National Federation of State High School Associations (nfhs.org)
 - New Jersey State Interscholastic Athletic Association (njsiaa.org)
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This article was written by the Brain Injury Alliance of New Jersey's Concussion in Youth Sports Committee. Additional information can be found at our website, www.bianj.org, or at www.sportsconcussion.com.

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