

# Boulder Valley Addresses Concussions by Introducing Players to the Baseline Test

By: Kay Fial

**For many years professional sports teams have used baseline tests to help effectively manage an athlete's concussion recovery.**

Last month, the Boulder Valley Youth Hockey Association offered their youth hockey players the same type of test.

The ImpACT baseline test takes about 20 minutes to complete and is administered on a personal computer. The test was offered as a free service to BVYHA members, (ages 10 and older), who signed up for a testing time slot. The results are used by ImpACT to further research, to help identify recovery by group, and to differentiate types of injuries by sport. Parents had the choice whether to keep the results, store them at BVYHA, or delete them.

Dr. John Kirk, a Pediatric Neurophysiologist who worked with BVYHA to provide information, education, and training to volunteers, has been working with the Jefferson County School District since 2004 administering the ImpACT baseline test to high school athletes.

He hopes that sometime soon, baseline testing will become part of the standard yearly physical for every child. As the first youth sports organization in Colorado to offer this service, Boulder is proactively addressing the health of their athletes when concussions occur.

"Boulder Valley Hockey is setting a precedent," said Kirk.

While researching helmet designs for Hefter Helmets, BVYHA President Dennis Hefter also investigated the rate, cause and results of concussions suffered in hockey.

"The incidents of concussions in hockey are higher than most people think," Hefter said. "Head injuries have become an issue in youth hockey based on the added size, strength, and speed of today's players. In fact, some studies show as many as ten percent of youth players who play 'check' hockey sustain concussions go untreated and most players are put into the dangerous position of returning to the ice too early."

Hefter, a trailblazer in the field of head safety, explained how he joined forces with Dr. Kirk and how the partnership helps hockey players.

"During my research, I ran across the ImpACT baseline test program and met Dr. John Kirk," he said. "We teamed up and decided to offer all BVYHA players the opportunity to take the ImpACT baseline test and be able to use the results as a data-based tool to help doctors decide when to return the player to the ice."

Contact sports like football, hockey, lacrosse and soccer have the highest rate of concussion incidents. Acceleration, deceleration, and rotation of the brain inside the skull during impact cause bruising of the brain known as concussion. While helmets decrease the fracture rate and slow the bleed rate, wearing a helmet does not always insure full protection against incurring a concussion.

A concussive blow to the head may present symptoms such as persistent headache, nausea, loss of consciousness, confusion, memory loss, fatigue, sensitivity to light, dizziness or double vision. The variety of symptoms associated with a concussion make it difficult to positively identify. A CT scan will determine fractures and bleeds but there is no test for a concussion. Diagnosis is based solely on signs and symptoms.

Because of this, Dr. Kirk views the ImpACT baseline test as a vital tool to help hockey players stay healthy.

Since concussions are difficult to diagnose and difficult to ascertain healing once the physical symptoms subside, how do you determine if the injury has healed? The most prevalent error by players is to return to the ice too soon, and something had to be done about it.

So in 1999, the University of Pittsburgh's Medical Center launched the ImPACT, (Immediate Post-concussion Assessment and Cognitive Testing), baseline test which monitors cognitive abilities of post concussion patients. The test was a more sophisticated and research-based software tool developed to help sports medicine clinicians evaluate recovery following a concussion.

The program evaluates and documents multiple aspects of neurocognitive functioning including memory, brain processing speed, reaction time, and post concussive symptoms. Taken before a concussion occurs, the test establishes a baseline or "normal" range of function. If an injury occurs, the test is re-taken weekly, and the individual's results are compared pre- and post- occurrence until results return to baseline performance.

The ImPACT baseline test assesses various parts of the brain pertaining to concussion and assesses changes of thinking skills affected by concussion. It was devised to measure the changes that occur as a result of concussion. Athletes that are not fully recovered from an initial concussion are significantly vulnerable to recurrent, cumulative, and even catastrophic consequences of a second concussion.

Children are especially susceptible. Dr. Kirk explains that the younger a child is when a concussion first occurs, the more likely he is to sustain further concussions. He says that children often try to mask pain and injury to avoid disappointing their parents and coaches. When a child returns to play while still recovering from a previous concussion, he is at significant risk for "Second Impact Syndrome."

Second Impact Syndrome occurs when an athlete sustains a second concussion while still recovering from the initial injury and can lead to permanent brain injury, coma, or death. Although this is rare, 3-5 cases appear yearly. Second Impact Syndrome only occurs in children under 21 years of age, but the results can be catastrophic.

***For more information, please visit the following web sites: [drjohnkirk.com](http://drjohnkirk.com) or [Impacttest.com](http://Impacttest.com)***

***The Boulder Valley Youth Hockey Association plans to offer the ImPACT baseline test to all of its members each season. We view this tool as an important step in protecting the long-term health of our players.***