



NORTH HALTON GIRLS HOCKEY ASSOCIATION

Concussion Protocol

Kate's Policy

**Parents, Players, Coaches, and Trainers
Information Package**

June 2014

Concussion Policy

North Halton Girls Hockey Association is implementing a concussion protocol for all players and volunteer staff. As part of the protocol all Representative (Rep.) and Development Stream (DS) players (Peewee through to Midget) will complete mandatory baseline testing, **specifically the IMPACT Neurocognitive Baseline Test**, commencing for the 2014/2015 season. House league players are encouraged to partake in baseline testing, but have the option to decline (discussion).

What is a Concussion?

The working definition used today for a concussion is “a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces” (developed by the consensus panel at the 1st International Conference on Concussion in Sport that was held in Vienna, Austria in 2001).

A concussion is caused by either a direct or indirect blow to the head, face or jaw or elsewhere on the body with an “impulsive” force transmitted to the head¹ (i.e. resulting in a whiplash effect to the head). This causes the brain to accelerate then rapidly decelerate within the skull. This acceleration /deceleration motion can induce mechanical changes to the nerve fibres causing them to stretch. This alters several important metabolic pathways and causes an energy crisis.

Concussion may or may not involve loss of consciousness. **Loss of consciousness is not a diagnostic requirement.** Less than 20% of concussions result in a loss of consciousness. Injury is apparent given the spectrum of symptoms experienced by a concussed athlete; no structural damage is caused to the brain itself. Unlike other sports injuries, nothing appears abnormal on standard imaging studies like CT, or MRI.

Why some athletes seem to recover quickly and others do not remains unclear. Even when symptoms resolve quickly it is advisable that a proper gradual return-to-play protocol be carried out. The whole recovery process therefore may take upwards of 3-4 weeks (at minimum) to prevent premature return to sport and risk of further injury to the brain.²

What is Post-concussion Syndrome?

This is a diagnostic term used when symptoms persist for several weeks and sometimes months after the injury. If symptoms persist beyond 3-4 weeks it is important that the player undergoes proper medical assessment (or re-assessment) in order to receive the right education and management strategies for their condition.³

What is Second Impact Syndrome?

Second Impact Syndrome is a rare, but serious consequence of head trauma which results in rapid swelling of the brain, potentially leading to severe disability or death. Controversy exists as to whether second impact syndrome is a product of cumulative head trauma (when an athlete sustains a concussion while still suffering the effects of a previous concussion), or if it is simply a product of a single, mild traumatic brain injury.

Regardless of its cause, second impact syndrome is a severe consequence of head injury in young athletes. **There should be absolutely NO return to play while an athlete is displaying signs and symptoms of a concussion.**⁴

¹ Shift Concussion. (2011). *Concussion FAQs*. Retrieved from <http://www.shiftconcussion.ca/resources/concussion-faqs/>

² Shift Concussion. (2011). *Concussion FAQs*. Retrieved from <http://www.shiftconcussion.ca/resources/concussion-faqs/>

³ Shift Concussion. (2011). *Concussion FAQs*. Retrieved from <http://www.shiftconcussion.ca/resources/concussion-faqs/>

⁴ Shift Concussion. (2011). *Concussion FAQs*. Retrieved from <http://www.shiftconcussion.ca/resources/concussion-faqs/>

The Testing Process

The **ImpACT Neurocognitive Baseline Test** will be completed by every Rep., DS and AP player Peewee to Midget. Players will not be rostered until testing is completed.

The test will be organized and supervised by a trained, accredited health professional in a clinic or off-site setting (See Appendix 6 for local clinicians). **The test is not valid if performed at home and will not be accepted.**

A baseline test “Confirmation of Completion ~ Player Form” form (See Appendix 1) must be signed by the accredited supervising health professional and given to the Team Trainer.

The Team Trainer will collect the individual players “Confirmation of Completion” forms, log all the players data together on the “Team Confirmation of Completion form (trainers tracking)” (See Appendix 2) and provide a copies to NHGHA for tracking purposes.

All Rep. DS and AP players must complete ImpACT baseline testing every 2 years.

While it is not mandatory, House League players are encouraged to and will have the opportunity to participate in Baseline testing.

NHGHA has selected the ImpACT neurocognitive test as it is the most-widely used and most scientifically validated computerized concussion evaluation system. It has the largest database of normative values as well as extensive third party research which has documented the high levels of reliability and precision when ImpACT is administered and interpreted by properly trained clinicians.⁵ See Appendix 3 for more detailed information on neurocognitive testing.

Pre Injury Management Protocol

Pre-season ImpACT Neurocognitive Baseline Testing:

It is mandatory that all Rep. players (Peewee to Midget) complete the ImpACT test between the time they are signed to a team and August 1 (prior to the start of the regular season). The “Confirmation of Completion ~ Player Form” must be provided to the accredited health professional. Upon completion of the ImpACT baseline testing, the trained staff will sign and date the form. The Team Trainer will collect each players - Confirmation of Completion – Player form, log the players data on the Team Confirmation of Completion (trainers tracking) form and provide a copy to NHGHA.

Should a player not complete the assessment within the allotted time frame they will not be able to participate in any team events (including but not limited to dry-land training, practices, exhibition games, or team camps) after August 1st until the assessment is completed.

House League – testing is not mandatory but players and families will be educated about ImpACT testing through association web site, and on the day of the evaluation skate. An accredited ImpACT clinic will be available at the arena to complete ImpACT testing for House league players during the first two game days of the season. Alternatively, parents can visit another accredited clinic.

⁵ Shift Concussion. (2011). ImpACT. Retrieved from <http://www.shiftconcussion.ca/teammates/impact/>

Identification of Potential Concussion during Practice or Play

If a player suffers a direct or indirect blow to the head, face or jaw, or elsewhere on the body resulting in a whiplash effect to the head, or starts exhibiting signs or experiencing symptoms associated with a concussion the trainer will remove the player from play. The trainer will review the signs and symptoms of a concussion with the player, and administer a sideline concussion assessment (See Appendix 5).

Common Signs and Symptoms of Concussion

Headache	Neck pain	Trouble focusing
Feeling “foggy”	Fatigue	Poor concentration
Vacant stare	Nausea or Vomiting	Confusion
Dizziness	Feeling “off”	Slow to follow direction
Easily distracted	Loss of balance	Ringing ears
Seeing “stars”	Poor coordination	Irritability changes
Blurred or Double Vision	Decreased Memory	Emotional changes

Post Injury Management Protocol

If, based on a review of the signs and symptoms OR the results of the sideline concussion assessment, the trainer suspects the player may have a concussion:

1. The player will be immediately removed from play and will not be permitted to return to play until a “Safe to Return to Play” form (See Appendix 4) is signed by a physician.
2. In the event of a serious head injury⁶, 911 will be called and the player will be sent by ambulance to the nearest ER. Follow physician recommendations.
3. The sideline concussion assessment completed by the trainer will be given to the player/parent to take to physician.
4. The player will see a physician within 48 hours of injury and will not return to play if symptomatic at rest or with physical/cognitive exertion.
5. If symptoms last for more than 48 hours the player will be referred for further clinical assessment and specialty care by a health professional that is trained in the evaluation and management of concussions. The player shall return to their health professional for a follow up comparative ImPACT assessment.
6. The player will be carefully monitored through their recovery process by a trained health professional, which will include a carefully graded increase in physical and cognitive exertion over time. It will also include return to school and play recommendations (See Appendix 7). These recommendations will be communicated to the physician.⁷
7. The player will return for follow up testing one month after returning to contact activities, for re-test purposes.

⁶ Emergency evaluation is warranted in situations of deteriorating mental status such as increasing confusion and difficulty recognizing people or places. Other symptoms requiring immediate medical attention include worsening headache; worsening nausea or vomiting, and excessive drowsiness or lethargy.

⁷ Shift Concussion.(2011). Concussion FAQs. Retrieved from <https://www.shiftconcussion.ca/resources/concussion-faqs/>

Coaches/Trainers/Managers:

1. Ensure all players PeeWee and over have a signed and valid neurocognitive baseline ImPACT test completed by an accredited professional prior to playing. The team Trainer keep a copy, and submit copies to the executive **If a Rep. player has not completed a baseline test by August 1 or a DS player before the first game, they are not allowed to participate in team events until the testing has been completed and .** Provide player/parent with information of who they can contact to have one done.
2. If you suspect that a player has sustained a concussion, remove them from play IMMEDIATELY.
3. Perform a sideline concussion assessment using tool provided. If no signs/symptoms, player can return to play.
4. Give the sideline assessment to player/parent and advise them to see a physician within first 48 hours.
5. Provide parents with Concussion Handout.
6. Do not allow player to return unless they provide a signed "Safe to Return to Play" form. Keep in designated binder.
7. Monitor player's signs and symptoms and remove from play again if any signs or symptoms return.

Appendices

Appendix (1): Confirmation of Completion ~ Player Form

Team: _____

Date ImPACT test completed: _____

Player name: _____

Accredited Clinic name and Contact details:

Supervising Health Professional name: _____

Supervising Health Professional signature: _____

Appendix (3): The ImPACT Test

ImPACT (Immediate Post-Concussion Assessment and Cognitive Testing) is the most-widely used and most scientifically validated computerized concussion evaluation system. ImPACT provides trained clinicians with neurocognitive assessment tools and services that have been medically accepted as state-of-the-art best practices -- as part of determining safe return to play decisions.

ImPACT has received numerous accolades and endorsements from many of the world's leading sports authorities, governing bodies, teams and athletes. Currently, more than 10,000 medical professionals have been trained by ImPACT on concussion management and the ImPACT Program. ImPACT is in use by many teams in MLB, NHL, NFL and WWE. More than 7,400+ high schools, 1,000+ colleges and universities, 900+ clinical centers, 430+ Credentialed ImPACT Consultants, 200+ professional teams and select military units use ImPACT. Cirque du Soleil, Irish and South African rugby teams, among many other organizations around the globe also use ImPACT.⁸

What is a neurocognitive baseline test?

It is recommended that athletes undergo a baseline test before they participate in their particular activity or sport. A baseline test is an important component in the overall concussion evaluation and management. The baseline neurocognitive test can be compared to the post-injury neurocognitive test. For healthcare professionals, the benefit of this test is that it allows for less reliance on subjective data, such as self-reported data, and rather places more emphasis on objective information. Having a baseline test allows for comparisons to be made pre-injury and post-injury. As well, the data obtained from a neurocognitive test can provide a benchmark for return to play based on an athlete's individual performance abilities.

With baseline testing, it is important to allow for a controlled environment as much as possible. If the athlete is distracted or giving minimal effort, the test will not be an accurate measurement of the individual's baseline. This baseline will be an important reference tool in the individual's concussion management and rehabilitation program.

What a neurocognitive test is not:

It is important to understand that a neurocognitive test is not the only piece of information used when making recommendations for an individual. Concussion evaluation and management is a multi-disciplinary approach, including the interaction between many healthcare professionals. As well, the neurocognitive test is not a substitute for medical evaluations and treatments, rather the test should be used in accordance with the individual's medical treatment plan. It should also be understood that the test is not a diagnostic tool, for the test is not designed to diagnose whether a concussion has occurred. Rather, this diagnosis must be made by a qualified health care provider.

For values relating to the sensitivity and specificity of the neurocognitive test (specifically the ImPACT test - Immediate Post-Concussion Assessment and Cognitive Testing) please refer to the article by Schatz & Sandel (2012).^{9 and 10}

⁸ ImPACT Applications, Inc. (n.d.). About ImPACT. Retrieved from <http://www.impacttest.com/about/>

⁹ Schatz, P, and Sandel, N. (2012). Sensitivity and specificity of the online version of ImPACT in high school and collegiate athletes. *American Journal of Sports Medicine*, 1-6

¹⁰ Schatz, P, Pardini, J.E., Lovell, M.R., Collins, M.W. and Podell, K. (2005). Sensitivity and specificity of the ImPACT test battery for concussion in athletes. *Archives of Clinical Neuropsychology*, 21, 91-99.

Neurocognitive testing after a concussion has occurred:

It is recommended that if an individual has suffered a concussion, or suspects a concussion has occurred, that they seek medical attention immediately. If the individual is diagnosed with a concussion, it is then recommended that the individual follows up to take a post-injury neurocognitive test 24 – 72 hours after the injury has occurred. As stated before, the neurocognitive test has the ability to test a wide variety of cognitive functions. Therefore, the test will be an indicator if there are any potential cognitive deficits that have occurred as a result of a concussion.

The data from the neurocognitive test will be used to help determine when the individual is ready to return to play. The neurocognitive test data will be compared and the goal is to have the data return to baseline values. This is important in the rehabilitation aspect, as individuals will often still have cognitive deficits, despite being ‘symptom free’. This demonstrates that returning to play once ‘symptom free’ may not be the most accurate measure of readiness. Therefore, using neurocognitive testing for baseline and post-injury allows for health professionals to further investigate how the brain is functioning. Therefore, the goal of concussion management is to ensure that the individual returns to play only when the brain has fully healed.

Appendix (4): Return to Play Form: Attached



HOCKEY TRAINERS CERTIFICATION PROGRAM RETURN TO PLAY

Name of Player

is able to return to play following injuries sustained on

Date

Considerations /restrictions with respect to return to play:

Name of Medical Authority

Type of Medical Authority

Date: _____

Signature

This information is strictly confidential and will only be used to assist in the player's safe return to play. All records will be returned to the player.

NOTE: The HTCP recommends that this be completed by a physician, chiropractor, physiotherapist or nurse practitioner for muscular or skeletal injuries (excluding fractures). Fractures as well as all neurological injuries including spinal injuries and concussions must be signed off by a physician.

Disclaimer: Personal information used, disclosed, secured or retained will be held solely for the purposes for which we collected it and in accordance with the National Privacy Principles contained in the Personal Information Protection and Electronic Documents Act.

Appendix (5): Sideline Concussion Test *Sports Concussion Assessment Tool (attached)

Sideline Concussion Test

This tool does not constitute, and is not intended to constitute, a standard of medical care. It is a guide derived from the Standardized Concussion Assessment Tool 2 (SCAT2) and represents a standardized method of evaluating athletes for a concussion consistent with the reasonable, objective practice of the healthcare profession. This guide is not intended to be a substitute for the clinical judgement of the treating healthcare professional and should be interpreted based on the individual needs of the patient and the specific facts and circumstances presented.

Athlete: _____ Position: _____ Team: _____ Evaluator: _____
 Evaluation date: _____ Time: _____ am / pm Injury date: _____ Time: _____ am / pm
 During: Game Practice Other _____
 Mechanism of injury: head to head elbow to head knee to head ground to head blow to body
other mechanism: _____ unknown mechanism
 Penalty called: Yes No Other circumstances: _____

This concussion assessment tool contains an assessment of orientation, memory, concentration, balance & symptoms. This tool is intended to be used in conjunction with your clinical judgement. If **ANY** significant abnormality is found, a conservative, "safety first" approach should be adopted. An athlete suspected of sustaining a concussion is a "No Go" and does not return to play in the same game or practice.

ANY OF THE FOLLOWING ARE OBVIOUS SIGNS OF DISQUALIFICATION (i.e. "No Go"):

- Yes 1. LOC or unresponsiveness? (for any period of time) If so, how long? _____
 Yes 2. Confusion? (any disorientation or inability to respond appropriately to questions)
 Yes 3. Amnesia (retrograde/anterograde)? If so, how long? _____
 Yes 4. New and/or persistent symptoms: see checklist? (e.g. headache, nausea, dizziness)
 Yes 5. Abnormal neurological finding? (any motor, sensory, cranial nerve, balance issues, seizures)
 Yes 6. Progressive, persistent or worsening symptoms? If so, consider cervical spine and/or a more serious brain injury (see box below)
 Other: _____ Total Physical Signs Score: (total above Yes scores) of 6 = _____

Neurological Screen for Cervical Spine and/or More Serious Brain Trauma

- Yes No Deteriorating mental status?
Yes No Any reported neck pain, cervical spine tenderness or decreased range of motion?
Yes No Pupil reaction abnormal or pupils unequal?
Yes No Extra-ocular movements abnormal and/or cause double vision? (difficulty tracking and/or reading)
Yes No Asymmetry or abnormalities on screening motor or sensory exam?

Overall Rating: If you know the athlete well prior to the injury, how different is the athlete acting compared to their usual self?

Check one: No different Very different Unsure

Orientation/SAC	_____ out of 5	Orientation/ Maddock's Questions	_____ out of 5
What month is it?	0 1	Where are we?	0 1
What is the date today?	0 1	What quarter is it right now?	0 1
What is the day of the week?	0 1	Who scored last in the practice/game?	0 1
What year is it?	0 1	Who did we play last game?	0 1
What time is it right now? (within an hour)	0 1	Did we win the last game?	0 1

Signs and symptoms of a concussion may be delayed, and therefore it may be prudent to remove an athlete from play, not leave them alone, and serially monitor them over a period of time.

IF IN DOUBT, TAKE A 'TIME OUT'.

Appendix (6): Certified ImPact Providers

N.H.G.H.A. players can complete their ImPact assessment with any of the **recognized** providers:

InFocus Rehabilitation Centre Inc.

81 Todd Road
Georgetown, ON L7G 4R8
(905) 702-7891

Halton Community Rehabilitation Centre

17 Wilson Drive, #12
Milton, ON L9T 3J7
(905) 876-1515

Eramosa Physiotherapy Associates

333 Mountainview Rd. S
Georgetown, ON L7G 6E8
(905) 873-3103

Eramosa Physiotherapy Associates

372 Queen Street
Acton, ON L7G 2N3
(519) 853-9292

Beyond Sports

10 Gladstone Square
Brampton, ON L6S 2H5
(905) 501-0033

The Core Optimum Health & Performance Group

400 Matheson Blvd E, Suite 24
Mississauga, ON L4Z 1N8
(905) 501-0033

Elite Physio

5100 Erin Mills Pkwy , Unit E229A
Mississauga, ON L5M 4Z5
(905) 607-2600 EXT 2

Erin PhysioFitness

6 Thompson Crescent
Erin, ON N0B 1T0
(519) 833-0606

Back On Track Wellness

2180 Itabashi Way
Burlington, L7M 5A5
(905)319-6606

Oakville Massage and Wellness Clinic

77 John St. Suite 201
Oakville, ON L6K 3W3
(905) 842-0287

Families should contact the clinic in advance regarding appointment booking. For a list of other clinics within Ontario please see the following link: https://www.impacttest.com/find_care_provider/

Appendix (7) 6 Step Return to Play

ThinkFirst-SportSmart Concussion Education and Awareness Program

CONCUSSION IN SPORT

Always Assess Airway, Breathing and Circulation

- ◆ All players who experience a concussion must be seen by a physician as soon as possible. A concussion is a brain injury.
- ◆ A concussion may involve loss of consciousness. However, a concussion most often occurs without a loss of consciousness.
- ◆ Mechanism: Blow to the head, face or jaw, or even elsewhere on the body. May also result from a whiplash effect to the head and neck.

Common Symptoms and Signs

- ◆ Symptoms and signs may have a delayed onset (may be worse later that day or even the next morning), so players should continue to be observed even after the initial symptoms and signs have returned to normal.

Symptoms

- ◆ Headache
- ◆ Dizziness
- ◆ Feeling dazed
- ◆ Seeing stars
- ◆ Sensitivity to light
- ◆ Ringing in ears
- ◆ Tiredness
- ◆ Nausea, vomiting
- ◆ Irritability
- ◆ Confusion, disorientation

Signs

- ◆ Poor balance or coordination
- ◆ Slow or slurred speech
- ◆ Poor concentration
- ◆ Delayed responses to questions
- ◆ Vacant stare
- ◆ Decreased playing ability
- ◆ Unusual emotions, personality change, and inappropriate behaviour

Caution: All players should consult a physician after a concussion. Coaches, trainers/safety people, players and parents should not attempt to treat a concussion without a physician's involvement.

Initial Response

- ◆ If there is loss of consciousness – Initiate Emergency Action Plan and call an ambulance. Assume possible neck injury.

Concussion

- ◆ Remove the player from the current game or practice
- ◆ Do not leave the player alone; monitor signs and symptoms
- ◆ Do not administer medication
- ◆ Inform the coach, parent or guardian about the injury
- ◆ The player should be evaluated by a medical doctor
- ◆ The player must not return to play in that game or practice



Drafted with the assistance of ThinkFirst Canada.

Return To Play Steps

- ◆ The return to play process is gradual, and begins after a doctor has given the player clearance to return to activity. If any symptoms/signs return during this process, the player must be re-evaluated by a physician. No return to play if any symptoms or signs persist. Remember, symptoms may return later that day or the next, not necessarily when exercising!

Step 1 No activity, only complete rest. Proceed to step 2 only when symptoms are gone. This includes avoiding both mental and physical stress.

Step 2 Light aerobic exercise, such as walking or stationary cycling. Monitor for symptoms and signs. No resistance training or weight lifting.

Step 3 Sport specific activities and training (e.g. skating).

Step 4 Drills without body contact. May add light resistance training and progress to heavier weights.

The time needed to progress from non-contact to contact exercise will vary with the severity of the concussion and the player. Go to step 5 after medical clearance.

Step 5 Begin drills with body contact.

Step 6 Game play.
[The earliest a concussed athlete should return to play is one week].

Note: Players should proceed through return to play steps only when they do not experience symptoms or signs and a physician has given clearance. Each step should be a minimum of one day. If symptoms or signs return, the player should return to the previous step, and be re-evaluated by a physician.

Never return to play if symptoms persist!

Prevention Tips

Players

- ◆ Make sure your helmet fits snugly and that the strap is fastened
- ◆ Get a custom fitted mouth guard
- ◆ Respect other players
- ◆ No hits to the head
- ◆ No hits from behind

Coach/Trainer/ Safety Person/Referee

- ◆ Eliminate all checks to the head
- ◆ Eliminate all hits from behind
- ◆ Recognize signs and symptoms of concussion
- ◆ Inform and educate players about the risks of concussion

Education Tips

www.hockeycanada.ca
Smart Hockey: More Safety, More Fun! Injury Prevention Program
ThinkFirst Canada website (www.thinkfirst.ca)
Dr. Tom Pashby Sport Safety Fund website (www.drpushby.ca)

Drafted with the assistance of ThinkFirst Canada.