

International
Paralympic Committee

Concussion in Paralympic Athletes The Next (But Not The Final) Frontier

Dr Jamie Kissick

06 September 2016



International
Paralympic
Committee





Editor's choice
Scan to access more
free content

Consensus statement on concussion in sport: the 4th International Conference on Concussion in Sport held in Zurich, November 2012

Paul McCrory,¹ Willem H Meeuwisse,^{2,3} Mark Aubry,^{4,5,6} Bob Cantu,^{7,8} Jiří Dvořák,^{9,10,11} Ruben J Echemendia,^{12,13} Lars Engebretsen,^{14,15,16} Karen Johnston,^{17,18} Jeffrey S Kutcher,¹⁹ Martin Raftery,²⁰ Allen Sills,²¹ Brian W Benson,^{22,23,24} Gavin A Davis,²⁵ Richard G Ellenbogen,^{26,27} Kevin Guskiewicz,²⁸ Stanley A Herring,^{29,30} Grant L Iverson,³¹ Barry D Jordan,^{32,33,34} James Kissick,^{6,35,36,37} Michael McCrea,³⁸ Andrew S McIntosh,^{39,40,41} David Maddocks,⁴² Michael Makdissi,^{43,44} Laura Purcell,^{45,46} Margot Putukian,^{47,48} Kathryn Schneider,⁴⁹ Charles H Tator,^{50,51,52,53} Michael Turner⁵⁴

► Additional material is published online only. To view these files please visit the journal online (<http://dx.doi.org/10.1136/bjsports-2013-092313>).

For numbered affiliations see end of article.

Correspondence to:

Dr Paul McCrory, The Florey Institute of Neuroscience and Mental Health, Heidelberg, VIC 3084, Australia; paulmccr@bigpond.net.au

Received 8 February 2013

Accepted 8 February 2013

PREAMBLE

This paper is a revision and update of the recommendations developed following the 1st (Vienna 2001), 2nd (Prague 2004) and 3rd (Zurich 2008) International Consensus Conferences on Concussion in Sport and is based on the deliberations at the 4th International Conference on Concussion in Sport held in Zurich, November 2012.¹⁻³

The new 2012 Zurich Consensus statement is designed to build on the principles outlined in the previous documents and to develop further conceptual understanding of this problem using a formal consensus-based approach. A detailed description of the consensus process is outlined at the end of this document under the Background section. This document is developed primarily for use by physicians and healthcare professionals who are involved in the care of injured athletes, whether at the recre-

SECTION 1: SPORT CONCUSSION AND ITS MANAGEMENT

The Zurich 2012 document examines the sport concussion and management issues raised in the previous Vienna 2001, Prague 2004 and Zurich 2008 documents and applies the consensus questions from section 3 to these areas.¹⁻³

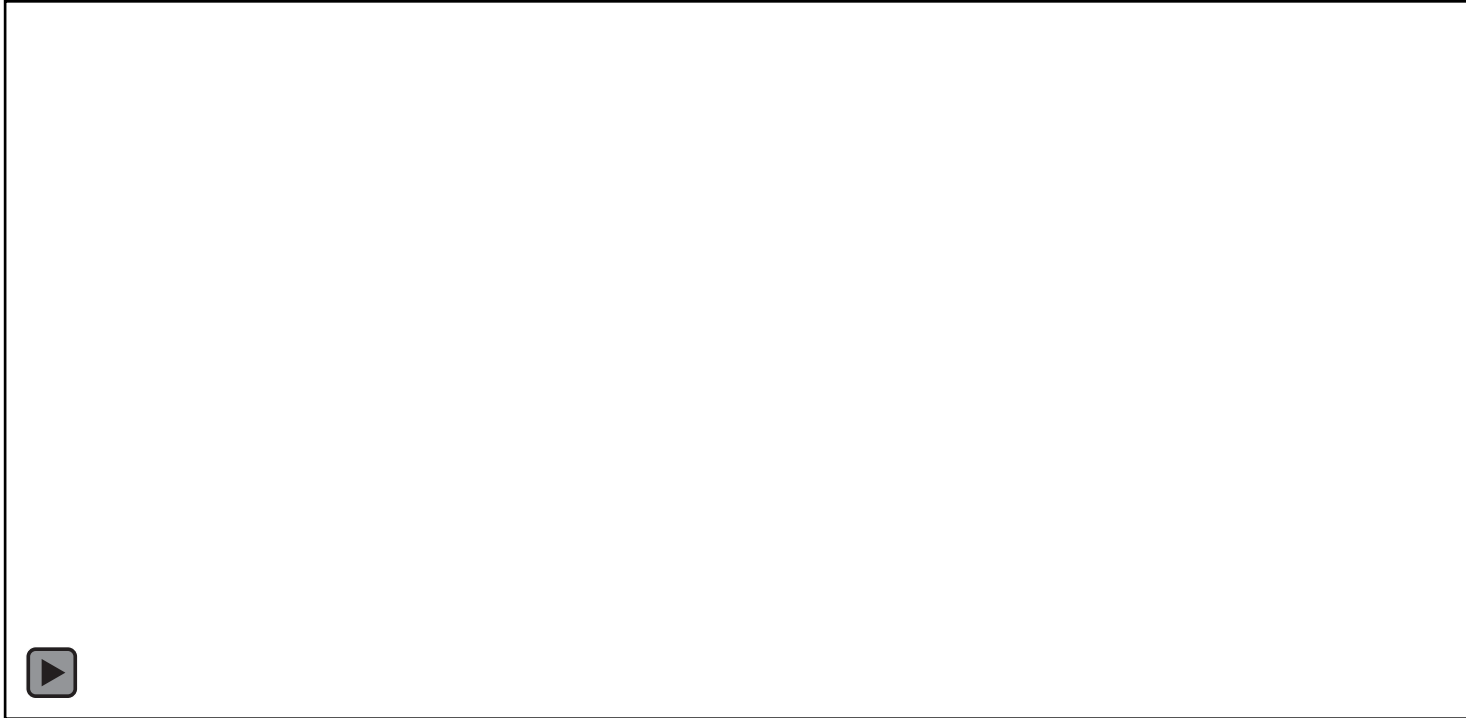
Definition of concussion

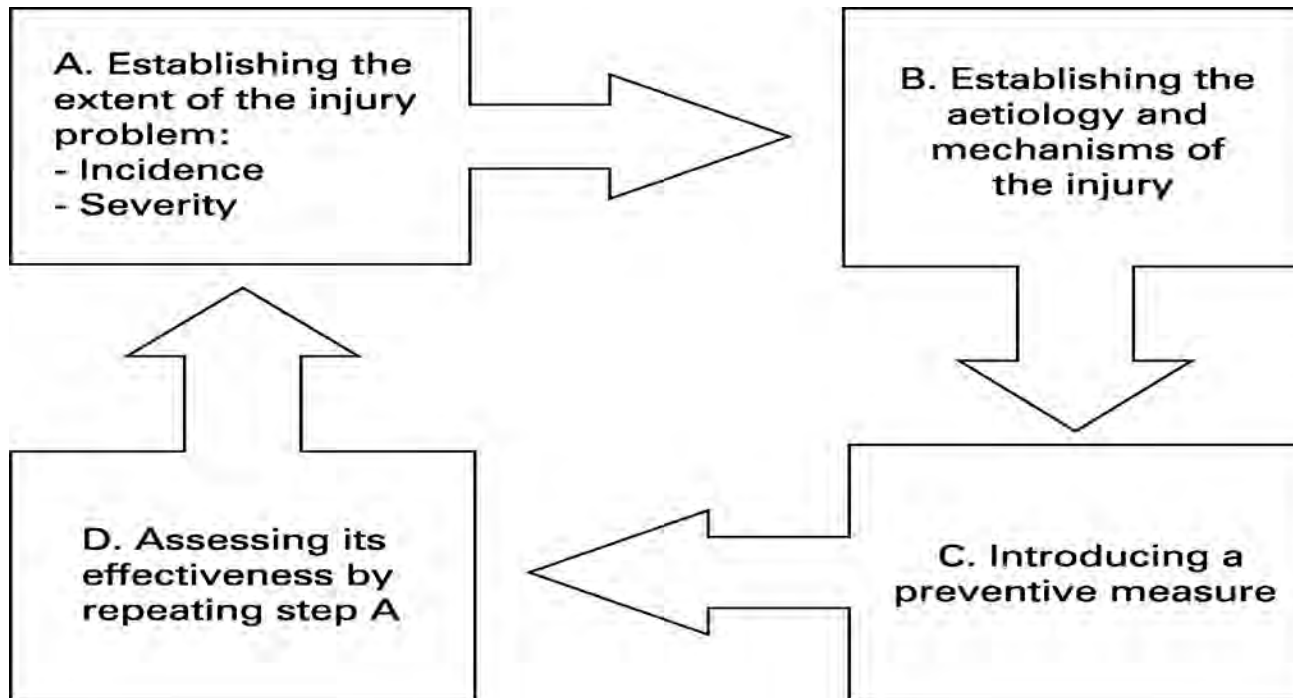
A panel discussion regarding the definition of concussion and its separation from mild traumatic brain injury (mTBI) was held. There was acknowledgement by the Concussion in Sport Group (CISG) that although the terms mTBI and concussion are often used interchangeably in the sporting context and particularly in the US literature, others use the term to refer to different injury constructs. Concussion in the historical sense, representing low-











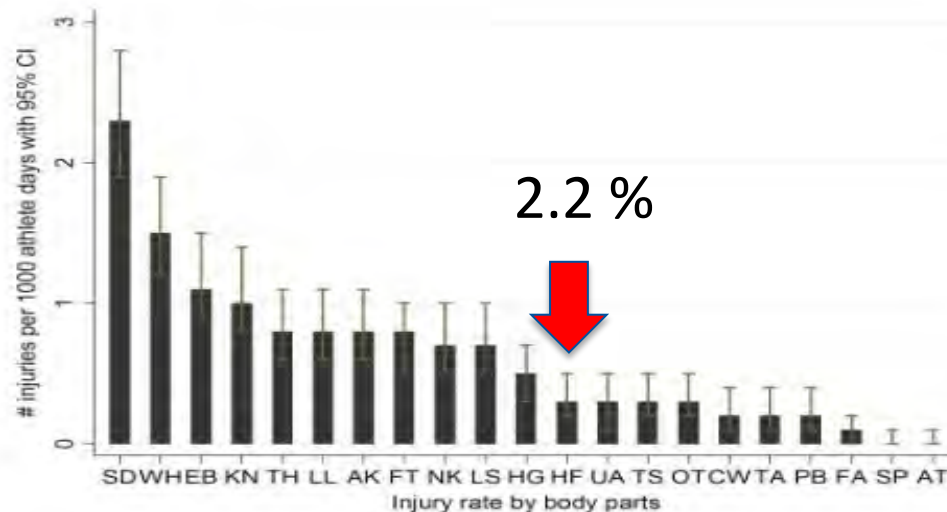
Van Mechelen W, Hlobil H, Kemper HC. Incidence, severity, aetiology and prevention of sports injuries. A review of concepts. Sports Med 1992 Aug 14(2): 82-89



2012 London Paralympics

Willick et al (BJSM 2013)

□ 14/633 injuries to head and face





2010 Vancouver Paralympics

Webborn et al (CJSM 2012)

- Sledge hockey: 118 athletes, 40 presented re injury, 2 head injuries (not defined specifically as concussion)
 - Alpine: 194 athletes, 42 presented re injury, 3 new head injuries
 - Nordic: 140 athletes, 26 presented re injury, 1 concussion
-



2014 Sochi Paralympics

Derman et al (BJSM, 2016)

Head, face and neck injuries

31/174 injuries

26/134 athletes with an injury (4.8 %)

Incidence rate (IR) 4.7 injuries/1000 athlete days





London 2012 football

Webborn et al (PM&R 2015)

Head and face injuries

5 a side: 3/22 injuries (13.6% of all injuries)

7 a side: 1/14 injuries (7.1% of all injuries)





Brazilian 5 a side football players

Magno e Silva et al (In J Sports Med 2013)

- 13 international athletes
- Head injuries 8.6% of all injuries







Concussions in wheelchair basketball

Wessels et al (Arch Phys Med Rehab 2012)

263 US wheelchair basketball players aged 18-60

- 6.1 % of players reported concussion in 09-10 season
 - 44 % did not report to team staff
 - 67 % of these because they did not want to be removed
 - 50 % did not know it was a concussion
 - Females had 2.5X higher concussion rate, but limited number of females
 - Regular wheelchair users had less concussions
-



Name: _____

Date / Time of Injury:
Date of Assessment: _____

Examiner: _____

What is the SCAT3?

The SCAT3 is a standardized tool for evaluating injured athletes for concussion and can be used in athletes aged from 12 years and older. It supersedes the original SCAT and the SCAT2 published in 2005 and 2006, respectively. For younger persons, ages 12 and under, please use the Child SCAT3. The SCAT3 is designed for use by medical professionals. If you are not qualified, please use the Sport Concussion Recognition Tool. Pre-season baseline testing with the SCAT3 can be helpful for interpreting post-injury test scores.

Specific instructions for use of the SCAT3 are provided on page 3. If you are not familiar with the SCAT3, please read through these instructions carefully. This tool may be freely copied in its current form for distribution to individuals, teams, groups and organisations. Any revision or any reproduction in digital form requires approval by the Concussion in Sport Group.

NOTE: The diagnosis of a concussion is a clinical judgment, ideally made by a medical professional. The SCAT3 should not be used solely to make, or exclude, the diagnosis of concussion in the absence of clinical judgment. An athlete may have a concussion even if their SCAT3 is "normal".

What is a concussion?

A concussion is a disturbance in brain function caused by a direct or indirect blow to the head. It results in a variety of non-specific signs and/or symptoms. (Some athletes, head injuries and most often does not involve loss of consciousness). Concussion should be suspected in the presence of any one or more of the following:

- Symptoms (e.g., headache), or
- Physical signs (e.g., unsteadiness), or
- Impaired brain function (e.g., confusion) or
- Abnormal behaviour (e.g., change in personality)

SIDELINE ASSESSMENT

Indications for Emergency Management

NOTE: A fit to the head can sometimes be associated with a more serious brain injury. Any of the following warrants consideration of activating emergency procedures and urgent transportation to the nearest hospital:

- Glasgow Coma score less than 15
- Deteriorating mental status
- Potential spinal injury
- Progressive, worsening symptoms or new neurologic signs

Potential signs of concussion?

If any of the following signs are observed after a direct or indirect blow to the head, the athlete should stop participation, be evaluated by a medical professional and should not be permitted to return to sport the same day if a concussion is suspected.

- | | |
|--|---|
| Any loss of consciousness? | <input type="checkbox"/> Y <input type="checkbox"/> N |
| "11 vs. 100m long?" | <input type="checkbox"/> Y <input type="checkbox"/> N |
| Balance or motor incoordination suddenly after normal movements on IT? | <input type="checkbox"/> Y <input type="checkbox"/> N |
| Disorientation or confusion greater than was appropriate to game? | <input type="checkbox"/> Y <input type="checkbox"/> N |
| Loss of memory | <input type="checkbox"/> Y <input type="checkbox"/> N |
| "11 vs. 100m long?" | <input type="checkbox"/> Y <input type="checkbox"/> N |
| "Before or after the injury?" | <input type="checkbox"/> Y <input type="checkbox"/> N |
| Blank or vacant look | <input type="checkbox"/> Y <input type="checkbox"/> N |
| Visible facial injury in combination with any of the above: | <input type="checkbox"/> Y <input type="checkbox"/> N |

1 Glasgow Coma Scale (GCS)

Best eye response (E)	
No eye opening	1
Eye opening in response to pain	2
Eye opening to speech	3
Eye opening spontaneously	4
Best verbal response (V)	
No verbal response	1
Incomprehensible sounds	2
Inappropriate words	3
Confused	4
Oriented	5
Best motor response (M)	
No motor response	1
Extension to pain	2
Abnormal flexion to pain	3
Flexion / Withdrawal to pain	4
Localizes to pain	5
Obeys commands	6

Glasgow Coma score (E + V + M) 0-15

GCS should be recorded for all athletes (even if abnormal) at the scene.

2 Maddocks Score³

Turn going to ask you a few questions, please listen carefully and give your best effort.

Maddocks (Maddocks) questions (1 point for each correct answer)

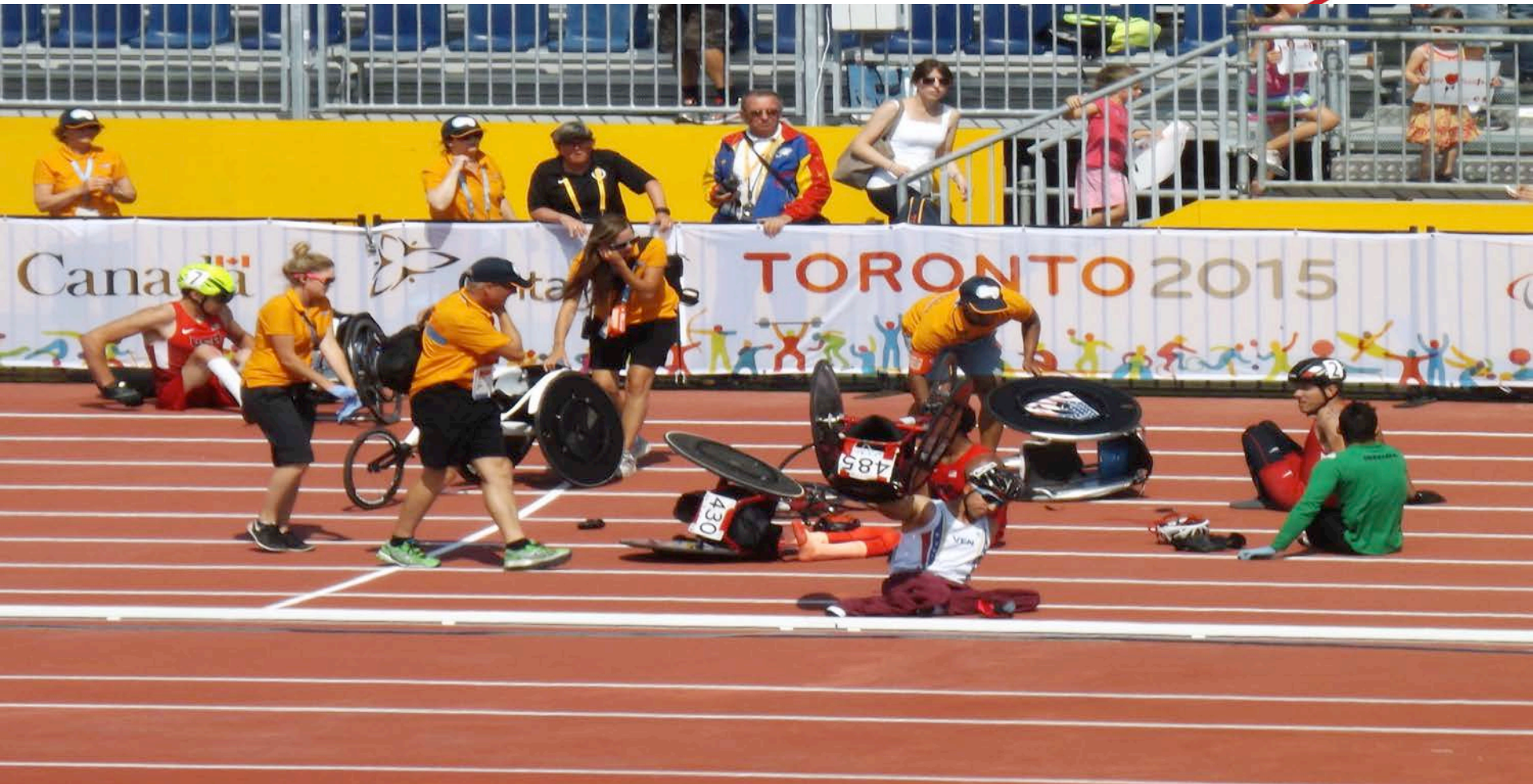
What service are we at today?	<input type="checkbox"/> 0 <input type="checkbox"/> 1
Which half is it now?	<input type="checkbox"/> 0 <input type="checkbox"/> 1
Who scored last in this match?	<input type="checkbox"/> 0 <input type="checkbox"/> 1
What team did you play last week's game?	<input type="checkbox"/> 0 <input type="checkbox"/> 1
Did your team win the last game?	<input type="checkbox"/> 0 <input type="checkbox"/> 1

Maddocks score 0-5

Maddocks score is suitable for sideline diagnosis of concussion only, and is not used for final status.

Model Mechanism of Injury ("fill in what happened"):

Any athlete with a suspected concussion should be **REMOVED FROM PLAY**, medically assessed, monitored for deterioration (i.e., should not be left alone) and should not drink a motor vehicle until allowed to do so by a medical professional. No athlete diagnosed with concussion should be returned to sports participation on the day of injury.



Canada

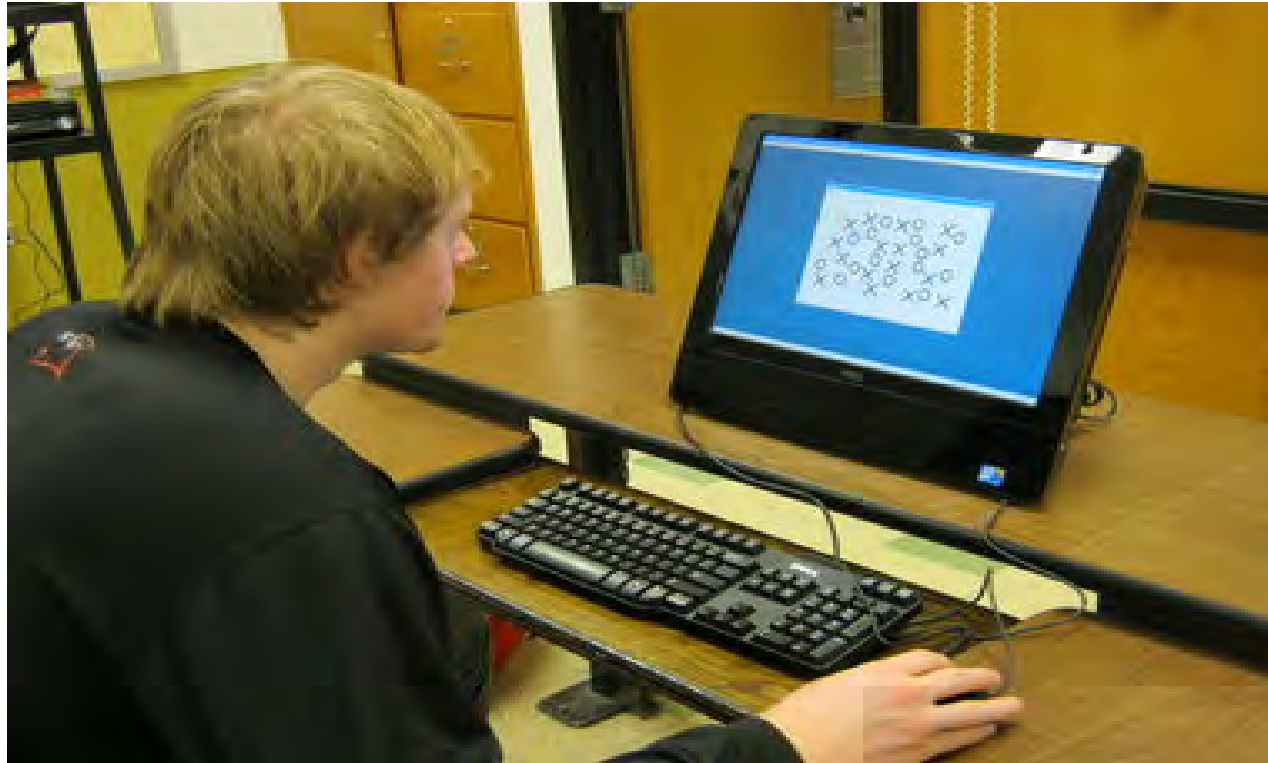
TORONTO 2015

430

485

USA

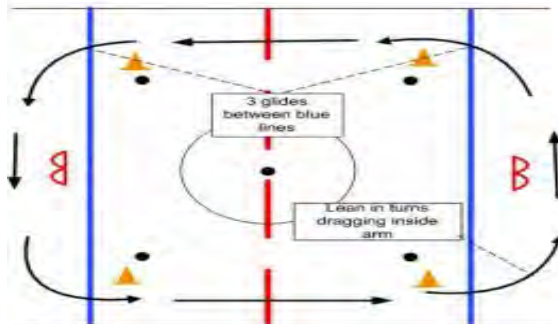








Glides (warmup)



Technical Skills:

Long glides between the blue lines.

Drill Overview:

Not a race. We are stretching and concentrating on leans in turns and long powerful glides between the lines.

Key Teaching Points:

Long strong pushes.

Key Execution Points:

This is not a race. Emphasize long strides.

Keep to 3 or less between the blue lines.

Pushed players with pusher work on leaning in corners.

Variations:

After 5 laps switch direction.





Injury prevention

The “3E” model

- Education
- Engineering
- Enforcement









MIND THE GAP

A photograph of a railway platform. In the foreground, a yellow tactile paving strip is visible. Below it, a sign with the words "MIND THE GAP" is set into a herringbone-patterned tile floor. In the background, there are several parallel railway tracks with gravel ballast.



Paralympic.org

Obrigado!