

# The Youth Concussion Awareness Network (You-CAN): Exploring peer-led concussion education programming in Canadian high schools

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Sport Information Resource Centre (SIRC)  
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Occupational Science  
& Occupational Therapy  
UNIVERSITY OF TORONTO

# Hopes for today...

- Spark a new way of thinking about concussion education
- Starting point for possible novel concussion education initiatives in sport
- A contact and potential collaborator

# Background



Concussions in youth **increased annually by 10.3%** from 2005-2014 in Canada. *(Rao, 2018)*



Concussions are **underreported** in youth due to lack of knowledge, social environment, perceived outcomes of reporting, perceived norms, and self-efficacy. *(Institute of Medicine and National Research Council, 2014)*

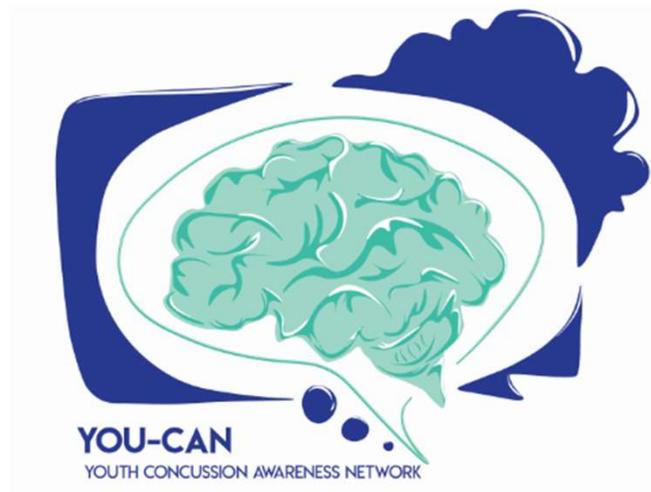


Social participation after a concussion was impacted by a **lack of understanding about concussions from their peers.** *(Valovich McLeod, 2017)*

**Peers are strongly influenced by their social networks**  
**Peer education can play a large role in student knowledge, attitudes, and behaviours**

# Youth Concussion Awareness Network (You-CAN)

- A peer-led concussion education program for Canadian high school students
- Ongoing (COVID impacts)



# Co-Investigators

## *Principal Applicants:*

**Nick Reed** – Holland Bloorview

**Pamela Fuselli** – Parachute Canada

## *Co-Applicants:*

**Roger Zemek** – CHEO

**Michael Ellis** – University of Manitoba

**Kelly Russell** - University of Manitoba

**Emily Kroshus** – Seattle

**Carol DeMatteo** – McMaster

**Michael Hutchison** - University of Toronto

**Christine Provvienza** – Holland Bloorview

**Shannon Scratch** - Holland Bloorview

**Anne Hunt** - Holland Bloorview

**Ryan Hung** - Holland Bloorview

**Chris Markham** – OPHEA

**Charles Tator** – UHN

**Alison Macpherson** – York University

**Ian Pike** - UBC

## *Core Team (Staff/Student):*

**Katherine Wilson** – UofT

**Kylie Mallory** – UofT (PhD Student)

**Christina Ippolito** – UofT

**Andie Hickling** – Holland Bloorview

**Del Fernandes** – Holland Bloorview

**Holland Bloorview**  
Kids Rehabilitation Hospital

  
**Parachute**  
PREVENTING INJURIES. SAVING LIVES.

 **CHEO** Research Institute  
Institut de recherche



**UNIVERSITY**  
**OF MANITOBA**



**Seattle Children's**  
HOSPITAL · RESEARCH · FOUNDATION

**McMaster**  
University 



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**TORONTO**

  
**Ophea**  
Healthy Schools  
Healthy Communities

 **UHN** Toronto General  
Toronto Western  
Princess Margaret  
Toronto Rehab

**YORK**  
  
**UNIVERSITÉ**  
**UNIVERSITY**

 **UBC** **THE**  
**UNIVERSITY OF**  
**BRITISH**  
**COLUMBIA**

**OAK**   
**CONCUSSION LAB**  
OUTCOME · ADVOCACY · KNOWLEDGE

# Collaborators

*Collaborators:*

**Brandy Tannenbaum**– Sunnybrook  
**Stephanie Beldick** - UofT Brainwaves  
**Gordon Stringer** - Rowan's Parent  
**Kathleen Stringer** - Rowan's Parent  
**Paul Weiser** - Youth Advisor  
**Nancy Kraetschmer** - Family Leader  
**Gideon Sheps** - Family Leader

*School Collaborators:*

**Gina Kay** - Crescent School  
**Kathryn Barnes** - Upper Canada College  
**George Kourtis** - TDSB  
**Sue Thompson** - UofT Schools  
**Stefan Banjevic** - Northern SS  
**Jonathan Isaac** – Northern SS

*Indigenous Community Collaborators:*

**Mohawk Council of Akwesasne**  
**Akwesasne Mohawk Board of Education**



# Rationale



This research addresses the need that Canadian high school students do not currently have:

1. Adequate knowledge of concussion
2. Access to reliable, up-to-date concussion resources
3. Opportunities to 'lead the charge'

By developing, implementing, and evaluating a peer-led service learning program (You-CAN) for Canadian high school students, **the study aims to increase high school student's:**



intent to report a suspected concussion to an adult



intent to provide social support to a peer after a concussion

# You-CAN Study Protocol



STUDY PROTOCOL

Open Access

# The youth concussion awareness network (You-CAN) - a school-based peer-led intervention to improve concussion reporting and social support: the protocol for a cluster randomized trial



Andrea Hickling<sup>1,2</sup>, Kylie D. Mallory<sup>1,3</sup>, Katherine E. Wilson<sup>1</sup>, Rosephine Del Fernandes<sup>1</sup>, Pamela Fuselli<sup>4</sup>, Nick Reed<sup>1,2,3\*</sup>  and Youth Concussion Awareness Network (You-CAN) Team

## Abstract

**Background:** Concussion prevalence is increasing in the pediatric population, and is a matter of public health concern. Concussion symptoms can be physical, cognitive, emotional and behavioural, and last longer in high school aged youth than adults. Concussions are underreported in youth due to their lack of knowledge, social environment, perceived outcomes of reporting, norms, and self-efficacy. The Youth Concussion Awareness Network (You-CAN) is a school-based peer-led program designed to increase high school students' intent to report a concussion, and provide social support to a peer. This study aims to investigate whether participation in You-CAN, a program grounded in service learning principles, impacts concussion knowledge, attitudes, intent to report a suspected concussion to an adult, and intent to provide social support to a peer. Secondary aims include assessing the implementation fidelity and acceptability of the intervention.

**Methods:** This longitudinal study will use a cluster randomized trial design. Three high schools from six randomly selected Canadian school boards will participate and be randomized to three study arms: (1) You-CAN led by school staff; (2) You-CAN led by school staff and research team; and (3) untreated comparison group. Intervention arms 1 and 2 will deliver the You-CAN program and create a Concussion Council at their school. The Concussion Council will deliver a concussion

# You-CAN Intervention



**Create a Council:** Bring together a group of students in your school who are passionate about concussion awareness and helping others.



**Share Concussion Resources:** Run a concussion awareness campaign in your school.



**Showcase Your Work:** Share and celebrate your campaign with other You-CAN schools from across Canada.

# You-CAN Intervention

The You-CAN program uses the IPARD model of service learning



# You-CAN Intervention



## September - December

Create a  
Concussion Council



## January - March

Run a Concussion  
Awareness Campaign



## April - June

Celebrate campaign at  
the Showcase  
(named in honour of  
Rowan Stringer)



# You-CAN Web Portal

- All participating schools will have access to **You-CAN web portal**

YOU-CAN

Français LOGOUT

ABOUT YOU-CAN / GET INVOLVED / RESOURCES / SUPPORT FOR TEACHERS / PROFILES / CONTACT

## YOUTH CONCUSSION AWARENESS NETWORK

- CREATE A COUNCIL**  
Bring together a group of students in your school
- SHARE CONCUSSION RESOURCES**  
Run a week long
- SHOWCASE YOUR WORK**  
Share and celebrate your campaign with other
- SUPPORT FOR TEACHERS**  
Find the school staff handbook and other

# Up-to-date, evidence-based resources

## RESOURCES & TOOLS

Filter by resource type Alphabetical (A-Z) Select tags SEARCH GRID VIEW LIST VIEW



**6 THINGS YOU SHOULD KNOW ABOUT CONCUSSIONS**

A poster that outlines 6 important facts about concussions.

ADD TO FAVOURITES

What is a Concussion



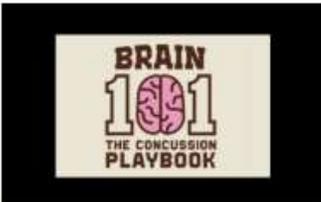
**HEADS UP CONCUSSION**

A FACT SHEET FOR ATHLETES (AGES 14 - 18)

A handout that highlights what a concussion is and what steps should be taken after a concussion is sustained.

ADD TO FAVOURITES

What is a Concussion Concussion Management Signs & Symptoms Social Support



**BRAIN 101 THE CONCUSSION PLAYBOOK**

A video that illustrates how a concussion is sustained, how to recognize a concussion, and why it is important to report any symptoms that arise.

ADD TO FAVOURITES

What is a Concussion How Concussions Happen Concussion Management Signs & Symptoms



**MINDS MATTER THE TRUTH ON CONCUSSIONS**

**FAQ COGNITIVE REST**

COGNITIVE REST AFTER A CONCUSSION (06&)

A question and answer video that highlights the importance of cognitive rest after a concussion.

ADD TO FAVOURITES

Concussion Management



**CONCUSSION DO'S AND DONT'S: THE FIRST FEW DAYS**

A handout highlighting the 'do's and don'ts' of concussion management within the first few days of recovery.

ADD TO FAVOURITES

Concussion Management



**CONCUSSION GUIDELINES FOR THE ATHLETE**

A handout that provides concussion information on identification, signs and symptoms and guidelines for return to sport.

ADD TO FAVOURITES

What is a Concussion How Concussions Happen Signs & Symptoms Return to School Return to Sport



**CONCUSSIONS WHAT THEY ARE WHAT TO DO**

Dr. Mike Evans leads you through a video on concussion education, management, and

ADD TO FAVOURITES

Concussion Management Signs & Symptoms Return to School Return to Sport



**CONCUSSION MYTHS VS. FACTS**

An infographic that addresses common myths and misconceptions about concussions.

ADD TO FAVOURITES

What is a Concussion

# Concussion Awareness Campaign



Make a Concussion Council social media page with fun educational posts about concussion using some of our resources or check out the pre-made pictures below!



Put up fun facts and quotes on monitors or TV screens around your school



Print out posters & infographics from our Resources page or design your own to post around your school



Get creative and make a video or larger banner to display in the halls



Create an interactive activity for other students! You can have students share their experience with concussion or a friend who has had one



Create a game of Concussion Trivia and host it before school or during lunch

**So many options!**

**Campaigns will look different depending on school wants/needs**

# Finding the Concussion Resources



## Online concussion resources for Canadian high school aged youth: A systematic search strategy

Kylie D. Mallory<sup>a,b</sup>, Andrea Hickling<sup>b,c</sup>, Katherine E. Wilson<sup>b</sup>, and Nick Reed<sup>a,b,c</sup>

<sup>a</sup>Rehabilitation Sciences Institute, Faculty of Medicine, University of Toronto, Toronto, Canada; <sup>b</sup>Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital, Toronto, Canada; <sup>c</sup>Department of Occupational Science and Occupational Therapy, Faculty of Medicine, University of Toronto, Toronto, Canada

### ABSTRACT

**Objective:** To identify online concussion resources that are suitable for Canadian youth and accurate according to the current International Consensus Statement on Concussion in Sport.

**Methods:** A five-phased systematic search strategy was used to identify concussion resources. This included 1. searching key Canadian stakeholder websites (sport organizations, injury prevention groups, children's hospitals, governments, public health agencies, and physical and health education associations), 2. pediatric concussion expert consultation, 3. applying inclusion and exclusion criteria, 4. reviewing content for accuracy according to the consensus statement and 5. evaluating resources for readability, usability and suitability.

**Results:** A total of 456 resources were initially identified however, only 32 met the final criteria. Across all resources, 34.6% ( $n=109$ ) were excluded as they were not designed primarily for youth. Among resources reviewed for content accuracy according to the consensus statement, 53.1% ( $n=51$ ) were excluded. When evaluating resources for readability, usability and suitability, 28.5% ( $n=13$ ) were excluded as they were not suitable for youth.

**Implications:** Most concussion resources available online are not written for youth and do not contain accurate information on pediatric concussion. The identified evidence-based resources can ensure that accurate and suitable information is provided to youth in order to enhance their concussion knowledge.

### ARTICLE HISTORY

Received 4 April 2019  
Revised 23 September 2019  
Accepted 10 November 2019

### KEYWORDS

Concussion; youth; brain injury; education; internet

# Online concussion resources for Canadian high school aged youth: A systematic search strategy



Identified **456** concussion resources  
with only **32** included

## IDENTIFIED NEED:

Online concussion resources need to **continue to be updated** to reflect the most accurate information, and written and **designed for youth** to fill the concussion knowledge gap

# RESOURCES & TOOLS

Filter by resource type Alphabetical (A-Z) Select tags SEARCH GRID VIEW LIST VIEW



### 6 THINGS YOU SHOULD KNOW ABOUT CONCUSSIONS

A poster that outlines 6 important facts about concussions

ADD TO FAVOURITES

Concussion Management

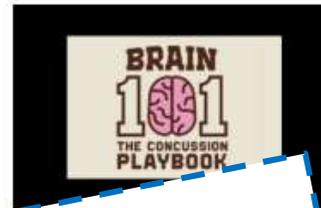


### A FACT SHEET FOR ATHLETES (AGES 11-18)

A handout that provides information on identification, signs and symptoms and guidelines for return to sport.

ADD TO FAVOURITES

Concussion Management



### CONCUSSION MANAGEMENT AND RETURN TO LEARN

Dr. Mike Evans leads you through a video on concussion education, management, and recovery guidelines.

ADD TO FAVOURITES

What is a Concussion

How Concussions Happen

Concussion Management

Signs & Symptoms



### COGNITIVE REST AFTER A CONCUSSION (Q&A)

A question and answer video that highlights the importance of cognitive rest after a concussion.

ADD TO FAVOURITES

Concussion Management

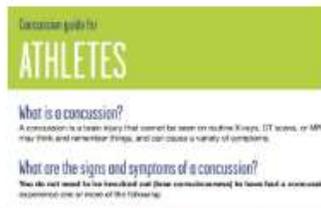


### CONCUSSION DO'S AND DON'TS: THE FIRST FEW DAYS

A handout highlighting the 'do's and don'ts' of concussion management within the first few days of recovery.

ADD TO FAVOURITES

Concussion Management



### CONCUSSION GUIDELINES FOR THE ATHLETE

A handout that provides concussion information on identification, signs and symptoms and guidelines for return to sport.

ADD TO FAVOURITES

What is a Concussion

How Concussions Happen

Signs & Symptoms

Return to School

Return to Sport



### CONCUSSIONS WHAT THEY ARE WHAT TO DO

An infographic that addresses common myths and misconceptions about concussions.

ADD TO FAVOURITES

What is a Concussion

Concussion Management

Signs & Symptoms

Return to School

Return to Sport



### CONCUSSION MYTHS VS. FACTS

An infographic that addresses common myths and misconceptions about concussions.

ADD TO FAVOURITES

What is a Concussion

ACCURATE AND FOR YOUTH

# Exploring Social Support through Lived Experiences



## Social support during youth concussion recovery

Helena Kita<sup>a</sup>, Kylie D. Mallory<sup>a,b</sup>, Andrea Hickling<sup>a,c</sup>, Katherine E. Wilson<sup>a</sup>, Emily Kroshus<sup>d,e</sup>, and Nick Reed<sup>a,b,c</sup>

<sup>a</sup>Concussion Centre, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital, Toronto, Canada; <sup>b</sup>Rehabilitation Sciences Institute, Faculty of Medicine, University of Toronto, Toronto, Canada; <sup>c</sup>Department of Occupational Science and Occupational Therapy, Faculty of Medicine, University of Toronto, Toronto, Canada; <sup>d</sup>Center for Child Health, Behavior and Development, Seattle Children's Research Institute, Seattle, Washington, USA; <sup>e</sup>Department of Pediatrics, University of Washington, Seattle, Washington, USA

### ABSTRACT

**Purpose:** We explored the lived experience of high-school aged girls receiving social support during concussion recovery to better understand (1) how they define meaningful social support and barriers/facilitators to receiving it; (2) who provides that support; and (3) the role of peers.

**Methods:** In person, semi-structured interviews were conducted with 10 girls (aged 14–19 years) with a personal history of concussion.

**Results:** Close friends, youth with personal history of concussion, and parents were identified as key providers of meaningful social support during concussion recovery. Participants identified specific examples of support provided by each group. Close friends built a sense of social inclusion that mitigated feelings of social isolation. Youth with a personal history of concussion used their lived experiences to communicate empathy and validate the participant's challenges. Parents assisted with practical challenges (e.g. accessing accommodations) by leveraging their "adult power".

Participants identified that lack of understanding of their lived experiences was a key barrier to receiving support. They proposed solutions focused on education initiatives highlighting personal accounts from youth with concussion, and specific examples of how peers can help.

**Conclusions:** Fostering social support may require strategies tailored to each group of key providers as they mitigate different challenges in recovery.

### ARTICLE HISTORY

Received 21 November 2019

Revised 19 March 2020

Accepted 5 April 2020

### KEYWORDS

Concussion; social support; youth; pediatric; peer support

# Social support during youth concussion recovery



## Social Support Network

### Close friends

### Peers with previous concussion experience

### Parents

Challenges they mitigate

- Feeling socially isolated
- Feeling misunderstood due to experiences of invisible injury + lack of belief from peers

- Feeling misunderstood, isolated and unable to ask for help

- Concerns about falling behind in school
- Barriers to accommodations



How?

- **Social inclusion:** texts, visiting at home, planning social activities that account for limitations
- **Solidarity:** validating challenges and standing up when peers call them “fakers”

- Sharing validating **stories**
- Communicating **empathy**
- Anticipating and meeting needs

- Leveraging their “**adult power**” at school to **advocate for accommodations**

# Improving the Provisions of Support

## IDENTIFIED NEED:

- Education sessions **led by youth** with concussion
- Education session that **focus on the functional impacts of concussion**
- Education sessions that include specific **examples of peer support**



## Emerging data:

What factors influence concussion knowledge, attitudes and intended behaviours?



# Methods

High school students complete the Concussion Reporting and Social Support Measure (CRSS-M)

Student  
demographics

Concussion  
knowledge

Intention to  
report a  
concussion

Intention to  
provide social  
support

# Study 1:

- Surveyed 1330 high school students



To explore if **sport participation**, specifically in high-risk and team sports, influenced high school students' **concussion knowledge**, intention to **report a concussion** and intention to **provide social support**

# Results

High-risk and team sport participants:

Higher  
concussion  
history

Lower intentions  
to report a  
concussion

Lower intentions  
to provide social  
support

Team sport participants:

Lower  
concussion  
knowledge

# Study 2:

- Surveyed 191 high school students



To identify the **intended behaviours** of youth towards providing **social support** to a peer with a concussion

To examine if **demographic factors** and **concussion knowledge** contribute to these intended behaviours

## Results: Positive Social Support Responses



### Help Take on School Responsibilities

- I would help them study for an upcoming test after they missed days of school (88%)
- I'd offer to take notes for them (89%)

### Advise Speaking to an Adult

- I would tell them to talk to their parent/guardian if they felt in a fog after falling off their bike (97%)
- I would encourage them to talk to their teacher if they were having trouble concentrating at school (98%)

## Results: Negative Social Support Responses



### Symptoms

- I would tell them I thought they were faking their symptoms to get out of school (30%)
- I would encourage them to play in a sports competition if they were still experiencing symptoms (30%)

### Isolation

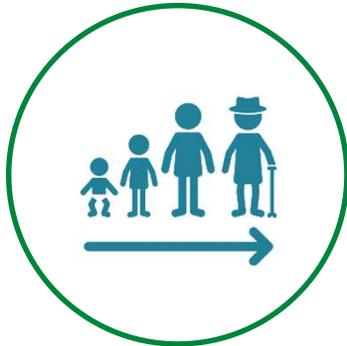
- I'd make sure to leave them alone while they're recovering (51%)
- I would tell them to sit in a dark room and rest (69%)

# Results

More favourable intentions to provide social support



Females  
 $U=2387, p<0.0005$



Older youth  
 $r_s=0.380, p=0.01$



Higher concussion knowledge  
 $r_s=0.223, p=0.01$



# Improving knowledge and behaviours

## IDENTIFIED NEED:

- Educational interventions targeted at **increasing concussion knowledge** and promoting **positive behaviour change** specifically among athletes that play **high-risk** and **team sports**
- Educational initiatives that enhance **concussion knowledge** and create **more supportive environments**

**We can do it together!**

# You-CAN: Most Excited About...

- **Co-creation with target audience (high school students)**
  - From grant review to web portal design to implementation strategy!
  - “Nothing about us, without us!”
- **Unlocks the potential for youth to help youth**
  - Who would a youth rather listen to?
  - Active engagement in solutions – builds capacity for the future
- **Simple and fun**
  - Aligns with club/team culture
  - A venue to express creativity
  - Not re-inventing the wheel – sharing great resources made by great people in a format that is relevant to high school youth
- **Reaching those who are underserved**
  - Research phase: Maritimes, Northern Ontario etc.
  - End of grant dissemination to all parts of country (and perhaps beyond)

# Hopes for today...

- Spark a new way of thinking about concussion education
- Starting point for possible novel concussion education initiatives in sport
- A contact and potential collaborator

# Check it out!

**Special  
Olympics**  
Ontario



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Occupational Science  
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## A Guide for Students & Athletes of All Abilities: e-Booklet

Learn about concussions as a student or athlete of all abilities, including what a concussion is, how to identify the signs and symptoms and what to do if you or someone you know might have a concussion.



<https://www.ontario.ca/page/guide-for-students-athletes-all-abilities-e-booklet>

**Promoting accessible concussion education for all!**



# Thank you!

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& Occupational Therapy  
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