

**THE CANADIAN CONCUSSION CENTRE
WEBINAR SERIES-SPONSORED BY LIUNA:
THE TREATMENT OF CONCUSSION**

*Charles Tator,
Canadian Concussion Centre,
Toronto Western Hospital and
University of Toronto*



**Canadian
Concussion
Centre at
UHN**

**Webinar
series
Jan.14, 2025**



CANADIAN CONCUSSION CENTRE WEBINAR SERIES FOR PEOPLE WITH PERSISTING CONCUSSION SYMPTOMS, THEIR FAMILIES, AND CAREGIVERS, AND HEALTH CARE PROFESSIONALS.

WELCOME to the First Concussion Webinar of 2025 focused on **THE TREATMENT OF CONCUSSION**

You have signed in to start the series, and IT IS FREE!!!!

The series is sponsored by LiUNA the LABOURERS INTERNATIONAL UNION OF NORTH AMERICA, Ontario Division, and this is their 5th year of support!!

Webinars EVERY 2 WEEKS with summer breaks, and then we start over again.

EVERY OTHER TUESDAY AT 6:00PM for the live event, but available at all times on our website which is www.canadianconcussioncentrehn.ca **50 one-Hour Sessions available to you at any time!!**

Open to people across Canada and in other countries.

CLINICIANS, RESEARCHERS and STAFF of the Canadian Concussion Centre



Dr. Charles Tator and a MULTIDISCIPLINARY TEAM of 20 top clinicians and researchers to form the CCC Research Team.

**Mozhgan Khodadadi
CCC Coordinator**



**Dr. Carmela Tartaglia
Neurologist,
SOLOWAY CHAIR.
Krembil Neuroscience
Centre, UHN
Neurodegenerative
Diseases**



**Dr. David Mikulis and Dr. Andrea Para
Neuroradiologists
Krembil Neuroscience Centre, UHN**

**Artee Srivastava,
Nurse Practitioner**

**Dr. Yasmin Soliman,
Concussion Fellow**



**Dr. Lesley Ruttan,
Neuropsychologist,
Series Moderator**



**Dr. Marie Sleg
Headache Neurologist**

**Ginette Moores
Headache Neurologist**

**Arezou Khodadadi,
Dissemination**

**Frankie Whyte,
Artist**

**Christian Pedersen,
Producer of the
Webinars**

**Dr. Karen D. Davis,
Neuroscientist and brain
imaging expert
Krembil Neuroscience
Centre, UHN**

**Dr. Abraham Snaiderman
Psychiatrist**

ALTUM Team Members

**Dr. Robin Green
Neuropsychologist
Toronto Rehabilitation
Institute**

**Dr. John Rutka,
Dizziness Expert**

**Shaleen Sulway
Vestibular Therapist**



**Dr. Richard Wennberg,
Neurologist
Krembil Neuroscience
Centre, UHN
MITCHELL GOLDHAR
MEG Unit**

**Eden Dales
Social Worker**

**Leslie Birkett
Occupational Therapist**

**Dr. Gabor Kovacs,
Neuropathologist
Brain Tissue Bank**

Canadian Concussion Centre Webinar Series



This lovely flyer was made for us by a concussion patient. We want patient input, so please write to us with your suggestions for the series at the webinar email address

Canadian Concussion Centre Webinar Series Winter 2025

Tuesday's 6pm EST

Supported by LiUNA.

These webinars are free to attend.

Registration is required and can be accessed by scanning the QR code:



Featuring experts on concussion and it's treatment.

This webinar series is for people with persisting concussion symptoms, their families, friends, caregivers and health care professionals.

Schedule:

January 14: Introduction to Treatment of Concussions. Dr. Charles Tator

January 28: Patient Panel: Our Journey to Recovery with Dr. Lesley Ruttan

February 11: Return to Learn after Concussion. Dr. Nick Reed

February 25: Return to Athletics, Principles and Who to See. Dr. Michael Hutchison.

March 11: Prevention of Subsequent Concussion. Stephanie Cowle & Dr. Firas Al Rawi

March 25: Concussion Alliance. Connor and Malayka Gormally.

April 8: Legal/Legislation/Guidelines Issues. Dr. Charles Tator and Patrick Brown

April 22: Imaging in Concussion. Dr Andrea Para.

May 6: Concussion Mythology and non-Evidence Based Therapies. Dr. Carmela Tartaglia.

Previous Sessions can be viewed at:
<https://www.uhn.ca/Krembil/Canadian-Concussion-Centre>

INTRODUCTION to CONCUSSION

Canadian Concussion Centre NEW Webinar Series

Bi-Weekly, Tuesday's 6pm-7pm ^{EST}
online sessions

(30 min presentation, 30 min Q & A

Moderated by Dr. Lesley Ruttan

Beginning Tonight on Zoom and accessible
on Youtube

Featuring experts on concussion treatment topics. Including exercise therapy, vestibular therapy, mental health, return to work, school and athletics, and more. This webinar series is for people with persisting concussion symptoms, their families, friends, caregivers and health care professionals.

This Biweekly Webinar Series is FREE. Supported by LiUNA.

Sign up at: [https://events.myconferencesuite.com/
Canadian_Concussion_Centre_Webinar_Series](https://events.myconferencesuite.com/Canadian_Concussion_Centre_Webinar_Series)



OUR CONCUSSION RESEARCH, EDUCATION AND TREATMENT JOURNEY AT TWH AND UHN

HISTORY of our CENTRE.

Initially, we were the “Canadian Sports Concussion Project”, but since 2015 we have been the “Canadian Concussion Centre”.

- 26 years ago, we began Research and Treatment of Concussions.
- Charles Tator and Carmela Tartaglia have each treated more than 1000 Concussed Patients in our clinics.
- We have also been involved in programs to Prevent Concussions for an even longer time, including ThinkFirst Canada (1992-2012) and **PARACHUTE CANADA (2012-present)**, Canada’s National Injury Prevention Agency.
- We have published more than 50 journal research articles on Concussions.

ACHIEVEMENTS.

- CCC Annual Concussion Research Symposia. Our 12th is May 23, 2025
- Soloway Chair in Concussion in 2014. Canada’s First Concussion Chair.
- Raised over \$10 Million for Concussion Research
- Concussion Fellowships- to teach other doctors about concussion
- LIUNA WEBINARS and Concussion Public Forums for Concussion Education and Support for Patients.
- Concussion Education Biennial Program for Lawyers and Insurers with the Law Society of Ontario.
- Other Workshops and Lectures including Ontario ECHO, Nurse Practitioners, and Others
- Many Research Concussion Research Grants from granting agencies including WSIB, Dept. of Transport, etc.

THE CONCUSSION FIELD HAS CHANGED : THE CONCUSSION **REVOLUTION**

AWARENESS AND RECOGNITION OF CONCUSSION. All health care professionals, parents, teachers and coaches are now expected to know something about concussions and able to **RECOGNIZE** when a concussion has occurred. There is now a Concussion Law in Ontario!

EARLY DIAGNOSIS OF CONCUSSION is the responsibility of medical doctors and nurses in most of the world.

TREATMENT OF CONCUSSION requires a Multidisciplinary team.

RESEARCH IN CONCUSSION is NOW a fast moving field, and **EVERYONE** must keep up. Unfortunately, there are still many unanswered questions and mysteries about concussion!

MORE EVIDENCE FOR THE CONCUSSION **REVOLUTION**

GOVERNMENTS now recognize the importance of concussion
e.g. PHAC and the harmonization of sport concussion
guidelines by Parachute Canada, 2017 and 2023
e.g. Provincial concussion guidelines PPM158 in 2014 and
Rowan's Law in Ontario in 2018-2025
e.g. CIHR and the Canadian Concussion Network 2020! **WE
NOW HAVE OUR OWN CANADIAN CONCUSSION NETWORK!**
We continue to monitor governments very carefully!!!

MORE EVIDENCE FOR THE CONCUSSION **REVOLUTION**

CONCUSSION CAUSES and PREVENTION: We now have Prevention Strategies for all CAUSES of Concussion – 1. Motor Vehicle Crashes, 2. Sports and Recreation, 3. Falls Among Seniors, 4. Intimate Partner Violence, and 5. Work-Related Concussions.

Started with CASEM CONCUSSION STATEMENT in 2000: “All players suspected of concussion.....”

e.g. ALL MOTOR VEHICLES must have...seat belts, air bags,.....

e.g. Many SENIORS now have access to FALLS PREVENTION PROGRAMS e.g. “use a cane” is my advice to many! NOVEMBER IS NATIONAL FALLS PREVENTION MONTH!! Parachute Canada!!!

MORE EVIDENCE FOR THE **REVOLUTION** IN THE CONCUSSION WORLD

CONCUSSION RESEARCH: many major improvements and discoveries:

1. The **DEFINITION** of **CONCUSSION** is now agreed upon thanks to the International Concussion in Sport Group, and the sport definition applies to all mechanisms of concussion
2. Everyone now agrees **CONCUSSION IS A BRAIN INJURY**
3. **CONCUSSION** is a better term than mild traumatic brain injury or mTBI: **WHAT DO YOU THINK??**
4. **Women and Concussion** –more is known about it: women concuss more easily and take longer to recover! We do not know the exact reasons, although weak neck muscles is one reason.
5. The **Effects are Cumulative**, **SO DO NOT GET ANOTHER CONCUSSION!!!!**

LET'S GET RID OF THE NAME "MILD TRAUMATIC BRAIN INJURY"!!!!

- mTBI is similar to Concussion. Concussion is a better term.
- mTBI- includes a mixture of more severe injuries and focal injuries such as bruises, haemorrhages and contusions of the brain. Physical Medicine/Rehab specialists prefer mTBI.
- There is nothing “mild” about concussions which can produce permanent consequences. (Therefore, is mTBI an oxymoron?)
- The public now understands what a concussion is. In *contrast*, not even health care professionals agree on what mTBI is. Thus, it is a confusing term describing a mixture of brain injuries. **CHUCK IT!**

**Unfortunately,
MTBI is dying
a slow death**

EVIDENCE FOR INCREASED PROGRESS IN CONCUSSION IN CANADA AND WORLDWIDE

There is continuing emphasis on concussion in Canada and worldwide. Canadian concussion researchers are involved internationally, and are regarded positively. There is high attendance at our Concussion Public Forums and Concussion Research Symposiums.

There are now concussion journals, and many concussion symposia.

We are exposing the charlatans who espouse hopeless, costly, time-consuming and non-evidence-based theories and remedies for concussion. “Concussion Mythology”.

Concussion PREVENTION, RESEARCH and TREATMENT TEAMS are MULTIDISCIPLINARY and require an “army” working together to ensure the results are as effective as possible.

CARE MUST BE INDIVIDUALIZED!!

INCREASED PROGRESS IN CONCUSSIONS

- **Concussion Guidelines for Sport Concussion Management** by Parachute Canada appointed by the Government of Canada and the Public Health Agency of Canada 2005 and renewed in 2023!!!
- **Rowan's Laws for Sport Concussion Prevention** –Ontario Government
- **Ontario Neurotrauma Foundation (ONF) Guidelines** for clinical management of Concussion for practitioners and patients Gov. of Ontario closed it up last year! **BUT IT IS BEING UPDATED ANYWAY!!**
- **OUR CCC Concussion Handbook**-download it from our website or write to us for a free copy

CONCUSSION HANDBOOK-CANADIAN CONCUSSION CENTRE

Managing Post-Concussion Symptoms

뇌진탕 potres nim viryt satricinājums
 concussion
 sokk сотрясение concussion cerebral
 smegenų sukrėtimas
 हि्लाना المخ في ارتجاج
 concussão cerebral
 сотрясение мозга ઉક્કેરટ আলোড়न
 atvotārāhdys commotion cérébrale
 تصادم Gehirnerschütterung



Read this booklet to learn:

- What post-concussion symptoms are
- How to manage post-concussion symptoms
- What resources are available for people with post-concussion symptoms

This is a guide for patients who have post-concussion symptoms. It includes information as well as strategies to help manage your symptoms and return to your normal daily routine.

Please note that it is not intended to replace advice from your health care team.

NOTE: This document is a draft and still currently being developed. It should not be shared or distributed to the public.

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CONCUSSION IS A BRAIN INJURY!!!

THE TYPES OF BRAIN INJURIES

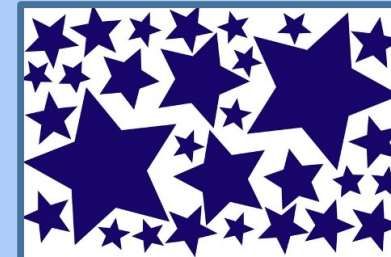
- Concussion is **THE MOST COMMON** Brain Injury-about **1%** of the population of Canada is Concussed Annually=400,000 concussions annually in Canada
- Other brain injuries are Bruising or Contusion of the brain, Tearing or Laceration of the brain, and Bleeding and Blood Clots in the brain or around the brain (Intracerebral, subdural and extradural haematomas)

CONSEQUENCES OF CONCUSSION AND THE CONCUSSION SPECTRUM OF DISORDERS

- **Acute Concussion:** Most people recover fully, but symptoms may last days or forever. Fortunately, we now have very effective treatments for most symptoms.
- **Second Impact Syndrome (SIS):** rare but deadly such as in Rowan Stringer. Occurs only in young people.
- **Persisting Concussion Symptoms:** occurs in about 30% of people with concussions.
- **Psychological Consequences: Mental Health Disorders: Depression, Anxiety, and Panic Attacks (PTSD)** in 35% of patients with persisting symptoms
- **Brain Degenerations: Chronic Traumatic Encephalopathy (CTE):** can occur alone or with other brain degenerative conditions, such as AD, PD, etc. CTE is probably rare, but the exact clinical picture is unknown, and so it is not yet possible to diagnose this in patients.

DEFINITION OF CONCUSSION

- Immediate and temporary alteration of mental functioning due to trauma
- The trauma does not have to be directly to the head, and can be due to a whiplash effect on the brain from a blow elsewhere on the body



(OLD Terms:
“Bell Ringer”,
“Ding”, “Seeing
stars” were all
concussions)

WHAT IS THE MECHANISM OF CONCUSSION?

- Exact mechanism unknown
- **Rotational acceleration or jiggle of the brain is a more frequent cause of concussion than linear acceleration**
- The “jiggle” of the brain within the skull causes concussion
- Axonal injury may occur to the nerve fibres in the brain
- Probably, the first concussion is a biochemical injury
- Concussion is NOT DUE TO Bleeding, or Tearing or Bruising of the brain

Current possible mechanism: concussion may be an example of NETWORK DAMAGE. Networks connect regions of the brain, and allow brain regions to work together to create a thought or movement. Networks involve both white matter tracts and collections of nerve cells in grey matter that work together. Networks can be studied by MRI, for example.

FEATURES OF CONCUSSIONS

1. Mild injury – in about 70% of people there is complete recovery **in one month**
2. Diffuse injury. No focal neurological deficits
3. Subtle deficits- eg dizziness, nausea, photophobia, about **65 possible symptoms**
4. Unconsciousness is rare (5%)
5. **Major cumulative effects** from repetitive injury-so try very hard not to get another one!
6. There is no evidence-based grading system.
7. Concussion is still a **Clinical Diagnosis**

THE INCIDENCE OF CONCUSSION AND THE RECOVERY FROM CONCUSSION DEPEND ON MANY FACTORS

- **Activity-** hockey, football, occupation
- **Age-**especially adolescents (sports) and older people (falls)
- **Gender-**women have higher % e.g. hockey, **MVC as well**
- **Number of Previous Concussions**
- **Genetic Effects-** runs in some families
- **Pre-Existing Conditions:** migraine, ADD, ADHD, Depression

THE DIAGNOSIS OF CONCUSSION

Is there a Biomarker for concussion? For example, is there an imaging or blood test that proves the diagnosis of concussion?

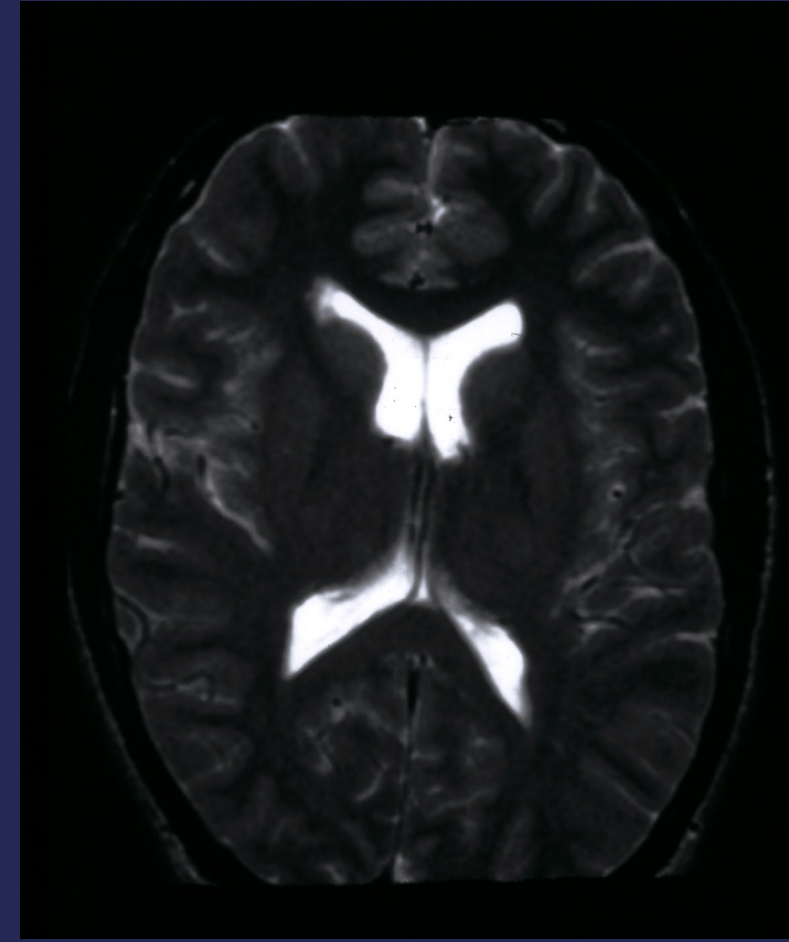
The Answer is Still NO! but we are getting closer with MRI DTI, CBF by MRI, and Body Fluid Biomarkers: tau, NF-L, GFAP?????



**Can You Diagnose
a Concussion on a
CT Scan or MRI?**

NO!

But, what about SPECT scans or Computerized EEG????? DEFINITELY NO!



Routine CT and MRI are always normal after concussion

If there is a lesion identified, it is more than a concussion

TREATMENT OF CONCUSSION - PRINCIPLES

- **Early Treatment** is advised. Dark rooms and avoidance of activity for more than 1-2 days are not advisable.
- **Multidisciplinary Treatment** Usually Required, and it is unlikely to be at one treatment facility.
- Treatment must be **Individualized** which means it is designed to help with YOUR SPECIFIC SYMPTOMS. No two concussed people have the same symptoms.
- **Physical NONIMPACT Activity** is advised at an early stage and should be 30 minutes daily, 7 days per week, and aerobic activities are advised. You should sweat a little!
- **Refreshing Sleep** is essential, and it can be determined why you are not sleeping by a sleep study.
- **Headache treatment** is essential, and often requires a “headache neurologist specialist” especially if you also have or have had migraine headaches.
- **Dizziness treatment** is essential, and usually requires a vestibular therapist.
- **Mental Health treatment** is essential for anxiety, depression and PTSD. Cognitive Behavioral Therapy (CBT) may help, but often requires psychotherapy including pharmaceuticals prescribed by a psychiatrist
- **Avoidance of drugs or drinks that act on the brain** including caffeine, alcohol, cannabis and street drugs because they will slow down recovery.
- **Early Return to Work and Early Return to Learn** are possible but with accommodations and the help of other professionals, especially an occupational therapist.

TREATMENT OF CONCUSSIONS-PRINCIPLES (CONT'D)

- **Physiotherapist** may be needed for associated injuries, such as whiplash which is often present
- **Family doctor** is needed to act as the coordinator, and to complete any reports that you need for employers, schools, return to sports, etc.
- You must work hard to **avoid another concussion** until you are completely recovered. Unless you are completely recovered, you will be worse after another concussion. Also, if you have dizziness or vertigo you will be more likely to lose your footing and fall.
- There are now many **remedies for photosensitivity and computer screen intolerance to help you to return to school or work.**
- **Recovery is slower in women, older people, after multiple concussions, and after certain causes of concussion especially motor vehicle crashes**

TREATMENT OF CONCUSSIONS-PROBLEMS

- **Tests are often needed to detect other injuries** that may be present in the brain or spine or elsewhere, and booking these tests may take time and delay treatment
- **Tests may also be needed to determine the extent of the injuries** such as neuropsychological tests for cognitive symptoms.
- Physician visits are covered by **government OHIP insurance**, but virtually all the other health care professionals you may need are not covered by OHIP, and this includes SW,PT,OT, etc. Many are covered by your insurance which may be your employment benefits insurance, automobile insurance, WSIB, etc.
- The **therapists you need may be at a distance** from where you work, and if you do not have a family doctor you may have great difficulty finding these therapists near where you live or work.
- There are a lot of **treatments being offered which are not evidence-based** indicating they may be worthless, and many are costly. That is a definite problem in the concussion world!

THERE ARE EXCELLENT CONCUSSION RESOURCES AND GUIDELINES THAT MAY AID YOUR RECOVERY

Living Concussion Guidelines (Shawn Marshall, Ottawa) <https://concussionsontario.org/>

Parachute Guidelines <https://parachute.ca/en/professional-resource/concussion-collection/canadian-guideline-on-concussion-in-sport/>

Paediatric Guidelines <https://pedsconcussion.com/>

Ontario Guidelines Ontario.ca <https://www.ontario.ca/page/rowans-law-concussion-safety>

Concussion Alliance <https://www.concussionalliance.org/>

Pink Concussions <https://www.pinkconcussions.com/>

CDC in USA <https://www.cdc.gov/heads-up/about/index.html>

THANK YOU DR. LESLEY RUTTAN MODERATOR OF THIS WEBINAR SERIES



- Lesley Ruttan is a registered psychologist practicing in the areas of Clinical Neuropsychology and Clinical Psychology. She received her Ph.D. in Clinical Psychology from York University. Dr. Ruttan has been a neuropsychologist at the Toronto Rehabilitation Institute/University Health Network since 2002 working with inpatient and outpatient acquired brain injury populations. She is a member of the Canadian Concussion Centre having co-developed and co-facilitated our concussion education and support workshops that started in 2014 for individuals struggling with prolonged post-concussive symptoms. She also maintains a part time private practice in Toronto.



CANADIAN CONCUSSION CENTRE

Research | Diagnosis | Solutions

THANK YOU