

# THE CANADIAN CONCUSSION CENTRE WEBINAR SERIES- SPONSORED BY LIUNA

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



**Canadian  
Concussion  
Centre**

**Webinar  
series**

**Jan. 9, 2024**



# 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 the Series of 26 webinars focused on learning about the **TREATMENT OF CONCUSSION**

You have to sign in to start the series. It is **FREE!!!!**

The series is sponsored by LiUNA the **LABOURERS INTERNATIONAL UNION OF NORTH AMERICA, Ontario Division.**

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

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 21 top clinicians and researchers to form the CCC Research Team.



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

Mozhgan Khodadadi  
Coordinator



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

## New Recruits:

Artee Srivastava,  
Nurse Practitioner

Dr. Yasmin Soliman,  
Concussion Fellow



Dr. Lesley Ruttan,  
Neuropsychologist,  
Moderator of the  
Series



Robyn Beron,  
Social Worker

## STAFF:

Arezou Khodadadi,  
Dissemination

Frankie Whyte,  
Artist

Christian Pedersen,  
Producer of the Series

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

# LIUNA CCC WEBINAR SERIES

## SEPTEMBER 2022 TO DECEMBER 2023

Date	Name of the presenter	Speciality	Topic
Sept 13, 2022	Dr. Charles Tator	Neurosurgery	Intro to Concussions
Sept 27, 2022	Dr. Carmela Tartaglia	Neurology	Concussion Spectrum
Oct 11, 2022	Dr. Mark Bayley	Physical Medicine and Rehabilitation	Exercise Therapy
Oct 25, 2022	Dr. David Mikulis	Neuroradiology	Imaging
Nov 8, 2022	Dr. John Rutka	Otolaryngology-Head and Neck Surgery	Dizziness
Nov 22, 2022	Shaleen Sulway	Physiotherapy	Vestibular Therapy
Dec 6, 2022	Dr. Marie Slegre	Neurology	Headaches
Jan 10, 2023	Dr. Eric Massicotte	Neurosurgery	Neck
Jan 24, 2023	Dr. Apameh Tarazi & Patient Panel	Neurology	Journey to Recovery
Feb 7, 2023	Dr. David Gold	Neuropsychology	Neuropsychological Assessment in Persisting Concussion Symptoms: How Brain Injury Affects Thinking
Feb 21, 2023	Dr. Robin Green	Neuropsychology	Persisting Problems with Attention, Speed of Processing, Memory and Executive Functions.
Mar 7, 2023	Dr. Abe Sniderman	Psychiatry	Anxiety, Depression & PTSD: Before and After Concussion
Mar 21, 2023	Dr. Lesley Ruttan	Neuropsychology & Psychology	Strategies for Improving Mental Health

Date	Name of the presenter	Specialty	Topic
Apr 4, 2023	Dr. Abe Sniderman	Psychiatry	Drugs for Neuropsychiatric Symptoms of Concussion
Apr 18, 2023	Dr. Paul Ranalli	Neurology	What Vision Therapy and what Vision Therapist
May 2, 2023	Eden Dales	Social Worker	When and Why to Consult a Social Worker
May 16, 2023	Leslie Birkett	Occupational Therapy	Return to Work, Vocational Rehabilitation and Occupational Therapy
May 30, 2023	Dr. Neil Parekh	Neurology	Sleep Problems: Getting to Sleep and Staying Asleep
Sept 12, 2023	Dr. Michael Hutchison & Dr. Richard Wennberg	Rehabilitation Science Neurology	Return to Athletics, Principles and Who to See
Sept 26, 2023	Dr. Nick Reed	Occupational Therapy	Return to Learn after Concussion
Oct 10, 2023	Dr. Charmody Loughton & Dr. Carmela Tartaglia	Chiropractor Neurology	Management of Insurance Issue
Oct 24, 2023	Stephanie Cowle & Dr. Firas Al Rawi	Knowledge Translation Sports & Exercise Medicine	Prevention of Subsequent Concussion
Nov 7, 2023	Dr. Carmela Tartaglia	Neurology	Concussion Mythology and non-Evidence Based Therapies
Nov 21, 2023	Dr. Charles Tator & Patrick Brown	Neurosurgery Lawyer	Legal/Legislation/Guidelines Issues
Dec 5, 2023	Dr. Lesley Ruttan & Patient Panel	Neuropsychology & Psychology	Patient Panel: Our Journey to Recovery



**Help us advertise.  
Send this to someone you  
know who has had a  
concussion and is looking for  
information. Your relatives and  
friends are welcome. Any  
healthcare professionals that  
you may be seeing-let them  
know so they can benefit as  
well.  
We have had many viewers  
from other countries including  
the USA, Denmark and Holland.**

**Canadian Concussion  
Centre Webinar Series  
Winter 2024**

**Tuesday's 6pm EST  
resuming  
January 9, 2024**

Supported by LiUNA.

These webinars are free to attend.

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.

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



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

**Schedule:**

**January 9:** Introduction to Concussions. Dr. Charles Tator

**January 23:** Imaging in Concussion. Dr. Andrea Para

**February 6:** NEW - Optometry Post Concussion. Dr. Kristine Dalton

**February 20:** NEW - Concussion in Women. Dr. Carmela Tartaglia

**March 5:** Vestibular Physiotherapy as a Treatment for Dizziness after Concussions. Shaleen Sulway

**March 19:** Concussion: An Invisible Brain Injury with Consequences. Dr. Carmela Tartaglia

**April 2:** Dizziness After Concussion. Dr. John Rutka



# INTRODUCTION to CONCUSSION

## Canadian Concussion Centre NEW Webinar Series

Bi-Weekly, Tuesday's 6pm-7pm EST

26 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 25 Session 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)



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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



# OUR CONCUSSION RESEARCH AND TREATMENT JOURNEY AT TWH

- 26 years since my first report about Concussions.
- **CANADIAN CONCUSSION CENTRE (1996-present)**, Toronto Western Hospital. I have treated more than 1000 Concussed Patients in our clinics, and Dr. Carmela Tartaglia has treated another 1000'
- We have been trying to Prevent Concussions for an even longer time -ThinkFirst Canada (1992-2012) and **PARACHUTE CANADA (2012-present)**, Canada's National Injury Prevention Agency.
- Our Clinical Research In Concussions-about 20years. We have published more than 50 journal articles
- Initially, we were the "Canadian Sports Concussion Project", but since 2015 the "Canadian Concussion Centre".

## ACHIEVEMENTS:

- Last spring we had our 10<sup>th</sup> Annual Concussion Research Symposium. Our 11<sup>th</sup> is on April 26, 2024
- Soloway Chair in Concussion in 2014. Canada's First Concussion Chair.
- We have raised about \$10 Million for Concussion Research
- Concussion Fellowships- to teach other doctors about concussion
- Concussion Public Forums and Concussion Education and Support Workshops
- Concussion Education for Lawyers and Insurers with the Law Society of Ontario.
- Other Workshops and Lectures
- Lots of Concussion Research Grants.

# 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  
e.g. Provincial concussion guidelines PPM158 in 2014 and  
Rowan's Law in Ontario in 2018-20 AND 2022!  
e.g. CIHR and the Canadian Concussion Network 2020! **WE  
NOW HAVE OUR OWN CANADIAN CONCUSSION NETWORK!**

# 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 info...e.g. “use a cane” is my advice to many! NOVEMBER IS NATIONAL FALLS PREVENTION MONTH!!

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

**CONCUSSION RESEARCH**: many major 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 why, although neck muscles are probably one reason.
5. **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 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 non-homogeneous 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 several 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.

BUT, 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  
 atvotārāhdys сотрясение мозга ઉક્કેરટ আলোড়ন  
 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)

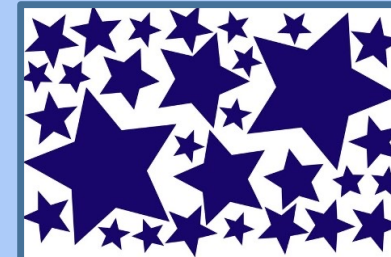


# CONSEQUENCES OF CONCUSSION = CONCUSSION SPECTRUM OF DISORDERS CHANGES THAT HAVE OCCURRED

- Acute Concussion SYMPTOMS **SHOULD BE GONE IN 30 DAYS**
- Second Impact Syndrome (SIS) **FEWER DOUBTERS after Rowan Stringer's Death**
- Postconcussion Syndrome (PCS) **NOW KNOWN AS PERSISTING CONCUSSION SYMPTOMS: about 30% of all concussions**
- Psychological Consequences – Mental Health Disorders:  
Depression/Anxiety, and Panic Attacks in **35% of PCS patients**
- Brain Degeneration - Chronic Traumatic Encephalopathy (CTE), Movement Disorders, Etc. **Can be purely CTE, but more often a mixture of brain degenerative conditions, such as AD, PD, etc.**  
**FORTUNATELY, VERY RARE!!**

# 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- the nerve fibres in the brain
- Probably, the first concussion is a biochemical injury
- NOT DUE TO Bleeding
- NOT DUE TO Tearing or Bruising of the brain

**Science is marching forward:**

**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 a movement. Networks involve both white matter tracts and collections of neurons 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?

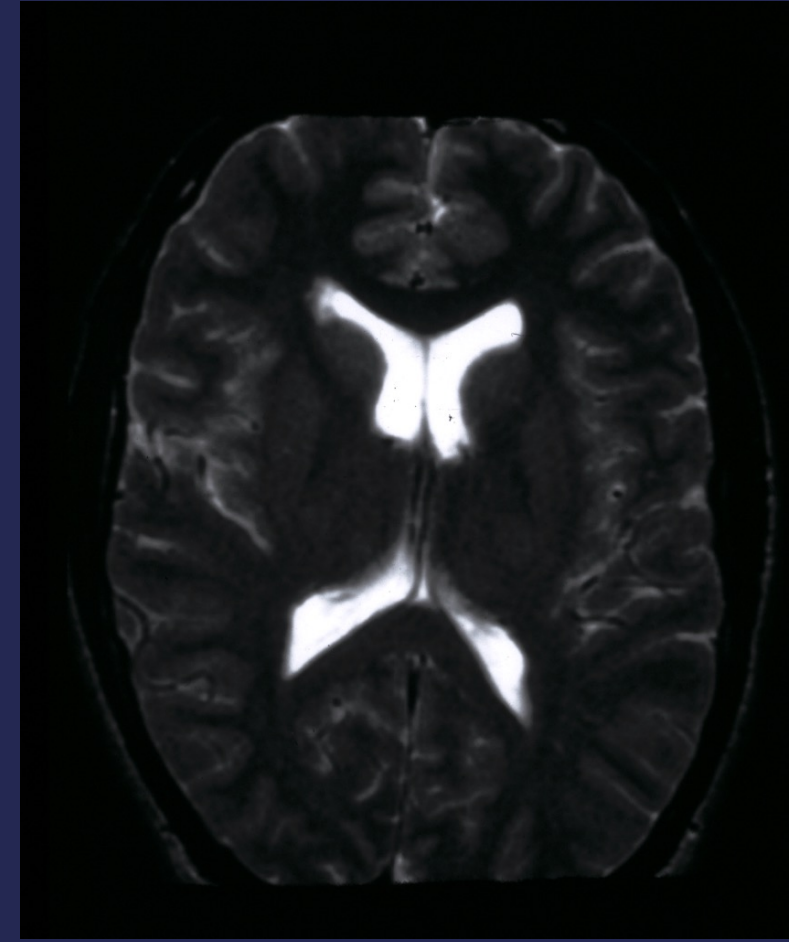
**The Answer is Still NO! but we are getting closer with MRI DTI, CBF by MRI, and Body Fluid Biomarkers: tau, NF-L, GFAP?????**



**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

# 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.