

A Multidisciplinary Approach to Concussion Prevention and Management

By: Christina Gulesserian

Summary of Concussions: Science, Policy and Sport – RCIScience panel – February 26, 2017

There are approximately 200,000 concussions in Canada per year. Concussions can potentially lead to devastating long-term health effects, and many are preventable. My passion for science and research drew me to the Royal Canadian Institute’s panel discussion on concussions titled “Concussions: Science, Policy and Sport”. This engaging multidisciplinary panel included an exercise medicine physician, neuroscientist, referee, researchers and a lawyer. Through a collaborative and a multifaceted approach, we collectively have the ability to significantly decrease the prevalence of concussion if we:

- ✓ Collect data and perform research
- ✓ Educate people
- ✓ Get publicity
- ✓ Change policies
- ✓ Design and evaluate prevention programs
- ✓ Change the rules and equipment used



Medical News Today

Dr. Doug Richards, Medical Director and Staff Physician at the Macintosh Sports Medicine Clinic in the University of Toronto guided us through “the ignorance in the clinical trenches”. For over 30 years he has worked with high performance athletes, from intercollegiate to Olympic and professional levels. According to Dr. Richards, our understanding of what a concussion is, along with its diagnosis and treatment, has significantly evolved in that time.

In the 1970’s there was an inability to see the damage – although it existed. An injured person would return to doing activity as soon as the symptoms resolved. Today there is rigor in diagnosing specific components, and functional treatment of specific components and system clusters. Although concussions cannot normally be seen by medical imaging tests (e.g., X-ray, CT, MRI), there is promising research in technologically advanced techniques (e.g., DTI, fMRI) that offer the potential to better understand the mechanism and impact of a concussion.

Concussions can affect the integrity of the brain. Dr. Lauren Sergio, Associate Professor in the School of Kinesiology and Health Sciences, highlighted the work currently being done in the Cognitive-Motor Neuroscience Laboratory at York University. Tests currently available on tablets assess the injured’s ability to think and move at the same time. These tests, administered before an injury has occurred, enable doctors to gather the subject’s baseline state. After an injury, secondary tests are done and subsequently compared to the previous tests. By doing both a pre- and post-injury assessment on injured athletes, we are able to improve the way we measure return to play after a concussion occurs.

Rugby referees, Dale Hall and Rose Labreche walked us through an approach to managing concussions at rugby games including:



- **Pre-match:** Become familiar with all teams (e.g., medical staff, first aid etc.), and set clear standards
- **During-match:** Be strict on tackles, when in doubt, sit them out
- **Post-match:** Work with medical and first aid staff

World Rugby and Rugby Canada provide mandatory concussion management training and safe tackling certifications that ensure all coaches and match officials can play a role in concussion prevention and player health and safety.

Policy is a vehicle for change on a large scale as it gives us an action plan to be proactive rather than reactive. Swapna Mylabathula and Sandhya Mylabathula have consulted on provincial concussion policy, notably the Ontario PPM 158, Canada's first concussion policy to be implemented in a school branch.

158 Policy Details

- Requires school boards to implement a policy on concussion management



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Research is underway to review and evaluate the effectiveness of concussion management in the Toronto District School Board. It is encouraging to see government and sports organizations put in place management protocol and prevention policies. Also, Sandhya Mylabathula is further investigating concussion prevention, management risk factors, education and policy.

In the past sports players did not always wear helmets, and lacked clear guidelines and game laws on types of rough and dangerous play. Changing the equipment and rules can make a difference in preventing injuries. Bill Pashby, retired lawyer and Chair of the Dr. Tom Pashby Sports Safety Fund, highlighted the contributions his father's charity had on ensuring sports players wear helmets, and directly influenced rule changes on hitting from behind and checking the head in hockey.

Through a collaborative and multifaceted approach of research, education, designing and evaluating prevention programs, along with changes in policies, equipment and rules – we are moving in the right direction to improve the concussion problem in Canada.

The moderator and panel included:

Moderator: Dr. Charles H. Tator – Senior Scientist, Toronto Western Research Institute and Professor of Neurosurgery at the University of Toronto

Panel Members

Dr. Doug Richards - Medical Director and Staff Physician, Macintosh Sports Medicine Clinic, University of Toronto

Dr. Lauren Sergio - Associate Professor, School of Kinesiology & Health Sciences, York University

Dale Hall - World Rugby Level 2 Referee and World Rugby Level 1 Coach for both 7s and 15s

Rose Labreche - International Rugby Referee

Swapna Mylabathula - MD/PhD Candidate, University of Toronto and Canadian Concussion Centre at Toronto Western Hospital

Sandhya Mylabathula - PhD Candidate, Concussion Awareness Advocate, & CIHR Public Health Policy Fellow, University of Toronto

TEDx talk: https://www.youtube.com/watch?v=kh_gJO6vOHk Podcast: <https://www.youtube.com/watch?v=Tyf3WXn4O1I>

About the Author



Christina Gulesserian is a Project Coordinator in a government healthcare organization. She holds an Honours Bachelor of Science and a Certificate in Project Management from the University of Toronto, St. George campus. She has certificates in change management, risk management, financial management and a lean healthcare yellow belt from the Ontario Health Association.