THE ROLE OF BIOMECHANICS IN INFORMING EQUIPMENT DESIGN AND RULES TO PREVENT HEAD INJURY IN SPORTS

Saturday, June 9
12:45-1:50 PM
Images Theatre
Simon Fraser University (Burnaby campus)

Helmets save lives daily in cycling, skiing, hockey and football. At the same time, growing understanding and concern about the frequency and consequences of concussion and other head injuries in sport is driving the need for improved helmet design and rule changes. Our moderated expert panel will address the role of biomechanics in the design of improved protective equipment and rules to prevent head injuries in sport.

Moderator: Carolyn J. Sparrey, Ph.D., P.Eng, Assistant Professor, Mechatronic Systems Engineering, Simon Fraser University; Principal Investigator, ICORD

FROM THE LAB TO THE FIELD: TRANSLATING BIOMECHANICAL RESEARCH TO REDUCE CONCUSSIONS IN SPORTS

Steven Rowson, Ph.D., Assistant Professor, Center for Injury Biomechanics, Virginia Tech, Blacksburg, VA, USA

Abstract: This presentation will discuss how biomechanical studies can inform equipment design and rule changes to reduce the incidence of concussion in sports. I will highlight examples of translational research at Virginia Tech where studies have directly led to new helmet designs and the implementation of rule changes in football leagues. Furthermore, I will describe how these fundamental principles have applications across all sports.

Speaker background: Dr. Steven Rowson’s research in the Virginia Tech – Wake Forest Center for Injury Biomechanics focuses on investigating the human tolerance to impact loading, with particular emphasis on concussion. In 2011, he developed the STAR Evaluation System, which evaluates the ability of football helmets to reduce the probability of concussion, and disseminates the results to the public so that consumers can make informed decisions when purchasing helmets. This work has resulted in a paradigm shift in the way consumers purchase helmets, as well as how helmets are designed.

CONCUSSIONS AND HELMETS: IS THERE AN ALTERNATIVE TO MORE AND BETTER PADDING THAT CAN MAKE A DIFFERENCE?

Peter A. Cripton, Ph.D., P.Eng., Associate Professor and Patrick Campbell Chair in Mechanical Design, Departments of Mechanical Engineering and Orthopaedics, The University of British Columbia.

Abstract: In this presentation I will give an overview of current state-of-the-art helmets and technologies that are being marketed or that are under development to provide improved protection against concussions. I will critically review helmet standards and helmet research in the context of concussion protection. I will also discuss the ongoing contentious debate about bicycle helmet efficacy and discuss what biomechanics has brought and can bring to this debate.

Speaker background: Dr. Peter Cripton's research is focused on injury prevention and neurotrauma. He and one of his PhD students, Tim Nelson, co-invented a novel helmet that incorporates features to provide improved protection against concussion and spinal cord injuries in head-first impacts. He is actively working towards commercialization of this helmet with local entrepreneurs and a Vancouver based start-up company. He is also leading a retrospective trauma analysis for the Whistler Sliding Centre.
Helmets save lives daily in cycling, skiing, hockey and football. Yet the frequency and consequences of concussion in sport remains a significant concern. This is driving the need for improved design of helmets and safer environments for sport. Our moderated expert panel will address the role of biomechanics in the design of improved protective equipment and rules to prevent head injuries in sport.

**speakers:**

**STEVEN ROWSON**  Center for Injury Biomechanics, Virginia Tech

From The Lab To The Field: Translating Biomechanical Research To Reduce Concussions In Sports

**PETER A. CRIPTON**  Depts of Mech Engineering and Orthopaedics, UBC, and ICORD

Concussions and Helmets: Is There An Alternative To More And Better Padding That Can Make A Difference?

For further information visit [www.sfu.ca/CSB-SCB2012](http://www.sfu.ca/CSB-SCB2012) or contact the organizing committee by email to csb2012@sfu.ca