A New Era of Scientific Collaboration

NCAA-U.S. Department of Defense Grand Alliance Concussion Conference

FOURTH ANNUAL ■ APRIL 30, 2021

NCAA | SPORT SCIENCE INSTITUTE | DEPARTMENT OF DEFENSE | ACC | VIRGINIA TECH

Presented in partnership with the Atlantic Coast Conference and Virginia Tech.

Conference Description

The NCAA Sport Science Institute and U.S. Department of Defense, in partnership with the Atlantic Coast Conference and Virginia Tech, are pleased to present the fourth annual Grand Alliance Concussion Conference: A New Era of Scientific Collaboration.

The conference will build on the prior sport-related concussion conferences hosted in partnership with the NCAA, Department of Defense, and participating member schools and conferences. During the event, concussion experts and researchers will share preliminary and recently publicized data from the NCAA-U.S. Department of Defense Grand Alliance, the largest concussion study and educational grand challenge ever conducted. Lectures will be didactic and demonstrative, and there will be ample time for panel discussions and questions and answers.

Target Audience

This conference is offered at no cost and designed for athletic trainers, team physicians, sports medicine clinicians and athletic health care administrators from NCAA member schools, and other key stakeholders who oversee and manage sport-related concussion and repetitive head impacts.

Conference Date and Time

Friday, April 30, 2021
8 a.m.-5 p.m., Eastern time

Course Learning Objectives

- Describe the knowledge gaps in concussion and repetitive head impact exposure.
- Explain the rationale for developing the NCAA-DoD Grand Alliance, which includes the largest, prospective, longitudinal clinical and advanced research study ever conducted in the history of concussion.
- Identify and understand emerging clinical and advanced research developments in sport-related concussion and repetitive head impact exposure.
- Identify educational programs and research projects designed to change the culture of concussion safety.
- Explain how science can transform policy and societal views on concussion and repetitive head impacts.

Continuing Education

CME

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Medical Society of Virginia through the joint providership of Carilion Clinic's CME Program and Virginia Tech Institute for Critical Technology and Applied Science. Carilion Clinic's CME Program is accredited by the Medical Society of Virginia to provide continuing medical education for physicians. Carilion Clinic's CME Program designates this live activity for a maximum 7.67 ***AMA PRA Category 1 Credits™***. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Accreditation for Athletic Trainers

Virginia Tech Sports Medicine (BOC AP#) approval is pending from the Board of Certification, Inc., to provide continuing education to athletic trainers. This program may be eligible for a maximum of 8.0 Category A CEUs. Athletic trainers should claim only those hours spent in the educational program.

AGENDA

8 to 8:10 a.m.

Welcome and introduction.
Daniel Sui, Virginia Tech.

8:10 to 8:15 a.m.

Conference overview.
Brian Hainline, NCAA.

8:15 to 8:55 a.m.

Part 1: Concussion as a public health matter: Sport and military perspectives.

Historical overview of the NCAA and its place in society.
James J. Phillips, Atlantic Coast Conference.

The NCAA-DoD Grand Alliance: NCAA perspective.
Brian Hainline, NCAA.

The NCAA-DoD Grand Alliance: DoD perspective.
Elizabeth Fudge, DoD.

Addressing the knowledge gaps of concussion.
Dallas Hack, Brain Health Consultant.

8:55 to 10:15 a.m.

Part 2: Clinical manifestations of concussion.

Natural history of sport-related concussion.
Thomas McAllister, Indiana University School of Medicine.

Sensitivity and Specificity of Computer-Based Neurocognitive Tests in Sport-Related Concussion: Findings from the NCAA-DoD CARE Consortium.
Steve Broglio, University of Michigan.

Age of first exposure to repetitive head impacts: Short and Intermediate-term consequences.
Jaclyn Caccese, The Ohio State University.

Age of first exposure to repetitive head impacts: Long-term consequences.
Robert Stern, Boston University.

Air travel after concussion.
Tara Sharma, University of Washington Medical Center.

10:15 to 10:25 a.m.

Break.

10:25 to 11:30 a.m.

Part 2: Clinical manifestations of concussion *(continued)*.

Influence of sex/gender on concussion.
Christina Master, Children's Hospital of Philadelphia.

Medical disqualification following concussion.
Julianne Schmidt, University of Georgia.

Discussion.

AGENDA

11:30 a.m. to 12:25 p.m. — **Part 3: Emerging concussion biomarkers.**

MRI findings in sport-related concussion.
Timothy Meier, Medical College of Wisconsin.

Blood biomarkers.
Michael McCrea, Medical College of Wisconsin.

12:25 to 1 p.m. — **Lunch.**

1 to 1:50 p.m. — **Part 3: Emerging concussion biomarkers *(continued)*.**

Genetics and genomics overview.
Thomas McAllister, Indiana University School of Medicine.

Discussion.

1:50 to 3:35 p.m. — **Part 4: Repetitive head impact and accelerometer data.**

Biomechanics of injury associated with head tolerance to impact loading.
Stefan Duma, Virginia Tech.

Repetitive head impact exposure: Emerging understanding of its role in concussion.
Steve Rowson, Virginia Tech.

Use of a mouthpiece device for head impact measurement in soccer players.
Joel Stitzel, Wake Forest School of Medicine.

Discussion.

3:35 to 3:45 p.m. — **Break.**

3:45 to 4:25 p.m. — **Part 5: Changing concussion culture.**

Overview of policy implications related to Mind Matters Executive Statements.
Emily Kroshus, University of Washington Department of Pediatrics.

Overview of policy implications of CARE football concussion and head impact exposure data.
Michael McCrea, Medical College of Wisconsin.

4:25 to 4:50 p.m. — **Part 6: Policy and implications overview.**

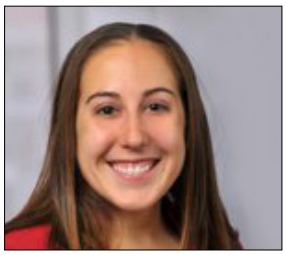
Discussion.
Brian Hainline, NCAA and **Kathy Lee,** DoD.

4:50 to 5 p.m. — **Concluding remarks.**

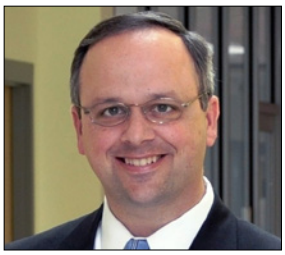
Brian Hainline, NCAA.

PRESENTERS

Steven Broglio, Ph.D., ATC
Associate Professor, University of Michigan Department of Kinesiology; Director, NeuroSport Research Laboratory



Jaclyn Caccese, Ph.D.
Assistant Professor, School of Health and Rehabilitation Sciences, The Ohio State University



Stefan M. Duma, Ph.D.
Harry C. Wyatt Professor and Director, Institute for Critical Technology and Applied Science, Virginia Tech

Elizabeth Fudge, M.P.H., M.N., FNP
Executive Officer and Supervisory Program Analyst, Office of the Assistant Secretary of Defense for Health Affairs, U.S. Department of Defense

Retired Col. Dallas Hack, M.D., M.P.H.
Brain Health Consultant

Brian Hainline, M.D.
Clinical Professor of Neurology, Indiana University School of Medicine, New York University School of Medicine; Chief Medical Officer, NCAA

Emily Kroshus, Sc.D., Ph.D.
Assistant Professor, Department of Pediatrics, Seattle Children's Research Institute, Center for Child Health, Behavior and Development, University of Washington

Katherine Lee, ANP/CNRN
Special Assistant for TBI to the Deputy Assistant Secretary of Defense for Health Readiness Policy and Oversight

Christina L. Master, M.D., FAAP, CAQSM, FACSM
Professor of Clinical Pediatrics, University of Pennsylvania Perelman School of Medicine; Associate Program Director of the Primary Care Sports Medicine Fellowship, Children's Hospital of Philadelphia

Thomas W. McAllister, M.D.
Albert Eugene Sterne Professor and Chair, Indiana University School of Medicine Department of Psychiatry

Michael McCrea, Ph.D.
Professor and Eminent Scholar, Vice Chair of Research, Director of Brain Injury Research, Department of Neurosurgery, Medical College of Wisconsin

Timothy B. Meier, Ph.D.
Associate Professor, Department of Neurosurgery, Medical College of Wisconsin

PRESENTERS

James J. Phillips, Ph.D.
Atlantic Coast Conference Commissioner

Steve Rowson, Ph.D.
Associate Professor, Department of Biomedical Engineering and Mechanics, Virginia Tech

Julianne D. Schmidt, Ph.D.
Associate Professor, Department of Kinesiology (Exercise Science, Athletic Training), Mary Frances Early College of Education, University of Georgia

Tara Sharma, D.O.
Clinical Assistant Professor of Neurology, University of Washington Medical Center

Robert A. Stern, Ph.D.
Professor of Neurology, Neurosurgery, and Anatomy & Neurobiology, BUSM, Director of Clinical Research, CTE Center

Joel Douglas Stitzel Jr., Ph.D.
Professor, Biomedical Engineering, Wake Forest University School of Medicine

Daniel Sui, Ph.D.
Vice President for Research and Innovation, Virginia Tech

Questions?

If you have any questions, please contact the NCAA Sport Science Institute at **ssi@ncaa.org**.

SPORT SCIENCE INSTITUTE

APPENDIX

Article	Journal	Link
Introduction		
A Two-Phased Approach to Quantifying Head Impact Sensor Accuracy: In-Laboratory and On-Field Assessments	Springer	Link
Characterization of Concussive Events in Professional American Football Using Videogrammetry	Springer	Link
Comparison of Laboratory and On-Field Performance of American Football Helmets	Springer	Link
Development, Validation and Pilot Field Deployment of a Custom Mouthpiece for Head Impact Measurement	Springer	Link
Repetitive Head Impact Exposure in College Football Following an NCAA Rule Change to Eliminate Two-A-Day Preseason Practices: A Study from the NCAA-DoD CARE Consortium	Springer	Link
Part 2: Clinical Manifestations of Concussion		
Acute Sport Concussion Assessment Optimization: A Prospective Assessment from the CARE Consortium	Springer	Link
Age of first exposure to American football and long-term neuropsychiatric and cognitive outcomes	Translational Psychiatry	Link
Age at First Exposure to Football Is Associated with Altered Corpus Callosum White Matter Microstructure in Former Professional Football Players	Journal of Neurotrauma	Link
Age of first exposure to football and later-life cognitive impairment in former NFL players	American Academy of Neurology	Link
Age at First Exposure to Repetitive Head Impacts Is Associated with Smaller Thalamic Volumes in Former Professional American Football Players	Journal of Neurotrauma	Link
Age of First Exposure to Tackle Football and Chronic Traumatic Encephalopathy	HHS Public Access Author Manuscript	Link
Age at First Exposure to Tackle Football is Associated with Cortical Thickness in Former Professional American Football Players	Oxford Academic	Link
Epidemiology of High School Sports-Related Injuries Resulting in Medical Disqualification: 2005-2006 Through 2013-2014 Academic Years	American Journal of Sports Medicine	Link
Estimated Age of First Exposure to American Football and Neurocognitive Performance Amongst NCAA Male Student-Athletes: A Cohort Study	Springer	Link
Estimated Age of First Exposure to Contact Sports Is Not Associated with Greater Symptoms or Worse Cognitive Functioning in Male U.S. Service Academy Athletes	Journal of Neurotrama	Link
Estimated Age of First Exposure to Contact Sports and Neurocognitive, Psychological, and Physical Outcomes in Healthy NCAA Collegiate Athletes: A Cohort Study	Springer	Link
Estimated Age of First Exposure to American Football and Outcome from Concussion	American Academy of Neurology	Link

APPENDIX

Flying After Concussion and Symptom Recovery in College Athletes and Military Cadets	JAMA Network	Link
Medical Disqualification Following Concussion in Collegiate Student-Athletes: Findings from the CARE Consortium	Sports Med	Link
Participation in Pre–High School Football and Neurological, Neuroradiological, and Neuropsychological Findings in Later Life: A Study of 45 Retired National Football League Players	American Journal of Sports Medicine	Link
Sensitivity and Specificity of Computer-Based Neurocognitive Tests in Sport-Related Concussion: Findings from the NCAA-DoD CARE Consortium	Springer	Link
The effect of age of first exposure to competitive fighting on cognitive and other neuropsychiatric symptoms and brain volume	Taylor & Francis Group: International Review of Psychiatry	Link
Word-reading skills were unrelated to concussion history and cumulative/age of first exposure to football	Taylor & Francis Group: The Clinical Neuropsychologist	Link
Part 3: Emerging Concussion Biomarkers		
Acute White-Matter Abnormalities in Sports-Related Concussion: A Diffusion Tensor Imaging Study from the NCAA-DoD CARE Consortium	Journal of Neurotrauma	Link
Cerebral blood flow in acute concussion: preliminary ASL findings from the NCAA-DoD CARE consortium	National Library of Medicine: National Center for Biotechnology Information	Link
Cumulative Effects of Prior Concussion and Primary Sport Participation on Brain Morphometry in Collegiate Athletes: A Study From the NCAA–DoD CARE Consortium	Frontiers in Neurology	Link
Longitudinal white-matter abnormalities in sports-related concussion	American Academy of Neurology	Link
Prevalence of Potentially Clinically Significant Magnetic Resonance Imaging Findings in Athletes with and without Sport-Related Concussion	Journal of Neurotrauma	Link
Prospective study of the association between sport-related concussion and brain morphometry (3T-MRI) in collegiate athletes: study from the NCAA-DoD CARE Consortium	British Journal of Sports Medicine	Link
Resting-State fMRI Metrics in Acute Sport-Related Concussion and Their Association with Clinical Recovery: A Study from the NCAA-DOD CARE Consortium	Journal of Neurotrauma	Link
Stability of MRI metrics in the advanced research core of the NCAA-DoD concussion assessment, research and education (CARE) consortium	Springer	Link
The Association Between Persistent White-Matter Abnormalities and Repeat Injury After Sport-Related Concussion	Frontiers in Neurology	Link

APPENDIX

Part 4: Repetitive head impact and accelerator data		
Accounting for Variance in Concussion Tolerance Between Individuals: Comparing Head Accelerations Between Concussed and Physically Matched Control Subjects	Springer	Link
Comparison of Head Impact Exposure Between Concussed Football Athletes and Matched Controls: Evidence for a Possible Second Mechanism of Sport-Related Concussion	Springer	Link
Correlation of Concussion Symptom Profile with Head Impact Biomechanics: A Case for Individual-Specific Injury Tolerance	Journal of Neurotrauma	Link
Factors Affecting Head Impact Exposure in College Football Practices: A Multi-Institutional Study	Springer	Link
Head Impact Exposure Sustained by Football Players on Days of Diagnosed Concussion	HHS Public Access: Author Manuscripts	Link
Timing of Concussion Diagnosis is Related to Head Impact Exposure Prior to Injury	HHS Public Access: Author Manuscripts	Link