

STEVEN ROWSON, PHD

Associate Professor, Virginia Tech
Biomedical Engineering and Mechanics

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EDUCATION

2011	Ph.D. <i>Advisor:</i> <i>Dissertation:</i>	Biomedical Engineering <i>Stefan Duma, PhD</i> <i>Head acceleration experienced by man: exposure, tolerance, and applications</i>	Virginia Tech
2008	M.S. <i>Advisor:</i> <i>Thesis:</i>	Biomedical Engineering <i>Stefan Duma, PhD</i> <i>Impact biomechanics of the head and neck in football</i>	Virginia Tech
2006	B.S.	Mechanical Engineering	Rowan University

PROFESSIONAL EMPLOYMENT

2018 –	Associate Professor Biomedical Engineering and Mechanics, Virginia Tech
2014 – 2018	Assistant Professor Biomedical Engineering and Mechanics, Virginia Tech
2011 – 2014	Assistant Research Professor School of Biomedical Engineering and Sciences, Virginia Tech

EXECUTIVE SUMMARY

I am currently an associate professor in the Biomedical Engineering and Mechanics department at Virginia Tech. My expertise is in injury biomechanics, concussion, and safe product design and assessment. I serve as director of the Virginia Tech Helmet Lab, where my research focuses on the biomechanics of traumatic injury in sports, automotive, and military environments. My research output is summarized below:

- 83 peer reviewed publications that have been cited over 3000 times (H-Index: 28)
- 26 funded research projects totaling over \$14M, with a personal share of \$4.8M
- Run the Virginia Tech Helmet Ratings, which allow consumers to make informed decisions when purchasing helmets

HONORS AND AWARDS

- 17 Leader in Research: Biomedical Engineering and Mechanics, Virginia Tech, 2018.
- 16 Best Paper: Most Downloaded Article, Annals of Biomedical Engineering, 2018.
- 15 Advisor: Outstanding MS Student, College of Engineering, Virginia Tech, 2017.
- 14 Outstanding New Assistant Professor, College of Engineering, Virginia Tech, 2016.
- 13 Virginia Tech National Distinction Award, 2016.
- 12 Editor's Choice: Most Downloaded Article, Annals of Biomedical Engineering, 2016.
- 11 Leader in Research: Biomedical Engineering and Mechanics, Virginia Tech, 2015.
- 10 Leader in Scholarship: Biomedical Engineering and Mechanics, Virginia Tech, 2015.
- 9 Editor's Choice: Most Downloaded Article, Annals of Biomedical Engineering, 2014.
- 8 Editor's Choice Award of Excellence, Annals of Biomedical Engineering, 2012.
- 7 Brain Trauma Foundation: Science and Prevention Award, 2011.
- 6 Top Reviewer, Annals of Biomedical Engineering, 2011.
- 5 First Place Doctoral Presentation, SBES Symposium, 2011.
- 4 Paul E. Torgersen Research Excellence Award: Best Master's Research, 2008.
- 3 Best Paper at the Biomedical Sciences and Instrumentation Symposium, 2008.
- 2 Best Paper for the Association for the Advancement of Automotive Medicine, 2007.
- 1 Chairman's Award at the Biomedical Sciences and Instrumentation Symposium, 2007.

TEACHING AND ADVISING

COURSES TAUGHT

4	Advanced Impact Biomechanics	BMES 5164
3	Bioinstrumentation and Analysis	BMES 3154
2	Injury Physiology	BMES 5184
1	Senior Design	ME 4105 / 4106

DIRECTED PHD DISSERTATIONS

- 1 Bryan Cobb, PhD, "Laboratory and field studies in sports-related brain injury," 2015.

DIRECTED MASTERS THESES

- 6 Ryan A Gellner, MS, "Identifying high risk individuals in youth football and evaluating tackling technique," 2018.
- 5 Tyler P Morris, MS, "Evaluating the head injury risk associated with baseball and softball," 2018.
- 4 Eamon T Campolettano, MS, "On-field measurement of head impacts in youth football: characterizing high magnitude impacts and assessing balance outcomes," 2017.
- 3 David W Sproule, MS, "Evaluation of the biomechanical performance of youth football helmets," 2017.
- 2 Jaclyn N Press, MS, "Biomechanics of head impacts in soccer," 2016.
- 1 Jake A Smith, MS, "Quantifying the effect of helmet fit on performance," 2016.

CURRENT POSITIONS OF PAST GRADUATE STUDENTS

- 7 Ryan Gellner, MS, Engineer, General Motors

- 6 Tyler Morris, MS, Engineer, General Motors
- 5 Eamon Campolettano, MS, Current PhD Student, Virginia Tech
- 4 David Sproule, MS, Engineer, Explico
- 3 Jaclyn Press, MS, Engineer, General Motors
- 2 Jake Smith, MS, Engineer, Windpact
- 1 Bryan Cobb, PhD, Assistant Professor, North Park University

CURRENT GRADUATE STUDENT ADVISING

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|---|--------------------|-----------------------|
| 4 | Emily Kieffer | PhD expected May 2021 |
| 3 | Tessa Reiber | MS expected May 2019 |
| 2 | Megan Bland | PhD expected May 2019 |
| 1 | Eamon Campolettano | PhD expected May 2019 |

HONORS AND AWARDS OF ADVISED GRADUATE STUDENTS

- 17 ABME Best Student Paper Award, Eamon Campolettano, 2018.
- 16 RMBS President's Award, Eamon Campolettano, 2018.
- 15 RMBS Best Paper Award: 2nd Place, Emily Kieffer, 2018.
- 14 RMBS Best Presentation Award: 2nd Place, Megan Bland, 2018.
- 13 RMBS Best Presentation Award: 3rd Place, Tyler Morris, 2018.
- 12 John D States Student Paper Award, AAAM, Megan Bland, 2017.
- 11 Torgersen Best MS Research Award, Virginia Tech Eamon Campolettano, 2017.
- 10 SBES Symposium Best MS research: 2nd Place, Eamon Campolettano, 2017.
- 9 Outstanding MS Student, Virginia Tech, Eamon Campolettano, 2017.
- 8 Torgersen Best MS Research Award, Virginia Tech, Eamon Campolettano, 2016.
- 7 Torgersen 1st Place MS Poster, Virginia Tech, Jaclyn Press, 2016.
- 6 SB3C MS Poster Competition: 3rd Place, Eamon Campolettano, 2016.
- 5 SBES Symposium Best MS Research, Jaclyn Press, 2016.
- 4 SBES Symposium Best Poster Award, Megan Bland, 2016.
- 3 SBES Symposium Best Poster Award, David Sproule, 2016.
- 2 SBES Symposium Best Poster Award, Eamon Campolettano, 2016.
- 1 BMES Annual Meeting MS Research Award, Abi Tyson, 2015.

THESIS OR DISSERTATION COMMITTEE MEMBER

- 13 Logan Miller, PhD, Development, validation, & analysis of tools to understand the biomechanical basis of exposure to repetitive subconcussive impacts, Wake Forest University, 2018.
- 12 John Scanlon, PhD, Evaluating the potential of an intersection driver assistance system to prevent US intersection crashes, Virginia Tech 2017.
- 11 Taylor Johnson, MS, Fleetwide models of lane departure warning and prevention systems in the United States, Virginia Tech, 2016.
- 10 Mireille Kelley, MS, Head impact exposure in youth football: evaluation of practice drills and age and weighted based on levels of play, Wake Forest University, 2016.
- 9 Stephanie Beeman, PhD, Biomechanical response of human volunteers and surrogates in a variety of loading regimes, Virginia Tech, 2015.
- 8 Abigail Tyson, MS, Development and implementation of laboratory test methods for the evaluation of wearable head impact sensors, Virginia Tech, 2015.

- 7 Jillian Urban, PhD, Real-world and population-based studies of head injury causation, Wake Forest University, 2015.
- 6 Ray Daniel, PhD, Evaluation of football safety techniques utilizing biomechanical measurements, Virginia Tech, 2014.
- 5 Anna MacAlister, MS, Head impacts in hockey and youth football: biomechanical response and helmet padding characteristics, Virginia Tech, 2014.
- 4 Elizabeth Lillie, MS, Validation and evaluation of cortical and full skull thickness changes with age and gender, Wake Forest University, 2014.
- 3 Tyler Young, MS, Head impact biomechanics and helmet performance in youth football, Virginia Tech, 2013.
- 2 Ray Daniel, MS, Head acceleration measurements in helmet-helmet impacts and the youth population, Virginia Tech, 2012.
- 1 Jillian Urban, Geometric morphometric and volumetric analysis of contributing factors to traumatic brain injury, MS, Wake Forest University, 2012.

ADVISED UNDERGRADUATE RESEARCHERS

17	Eric Egeli	current student
16	Sarah Heine	current student
15	Grace Pierce	current student
14	Chase Vaillancourt	current student
13	Casey Charon	current student
12	Charlotte Clark	current student
11	Bailey Van Namen	current student
10	Drew Richard	current student
10	Joe Lakkis	BS May 2018
9	Andrew Davis	BS May 2018
8	Tessa Reiber	BS May 2018
7	Megan Craig	BS Dec 2017
6	Emma Moore	BS May 2017
5	Mark Alley	BS May 2017
4	Andy Polcari	BS May 2017
3	Kathryn Farkas	BS May 2017
2	John Brady	BS May 2016
1	Evan Terrell	BS May 2016

RESEARCH PUBLICATIONS

PUBLICATIONS SUMMARY

Publication Type	Number		
Book Chapters	3		
Refereed Journal Papers	56		
Refereed Conference Papers	27		
Conference Abstracts	98		
Invited Presentations	12		
Patents	1		
Websites	1		
Citations Service	Number of Citations	H-Index	
Google Scholar	3008	28	
Web of Science	1466	20	
Scopus	1806	21	

Advised students are highlighted in author lists as: ***Student**

BOOK CHAPTERS

- 3 Rowson S and Rowson B, "Biomechanics of Head Trauma," Chronic Traumatic Encephalopathy. Proceedings of the Boston University Alzheimer's Disease Center Conference, Elsevier Health Sciences, 2017.
- 2 Rowson B, Rowson S, and Duma SM, "Biomechanical forces resulting in brain injury," Textbook of Traumatic Brain Injury, 3rd Edition, 2017.
- 1 Duma SM and Rowson S, "The biomechanics of concussion: 60 years of experimental research," Concussions in Athletics, pp. 115-137, 2014.

REFEREED JOURNAL PAPERS

- 56 ***Bland ML**, McNally C, and Rowson S, "Differences in impact performance of bicycle helmets during oblique impacts," Journal of Biomechanical Engineering, vol. 140(9), pp. 091005, 2018.
- 55 Beckwith JG, Zhao W, Songbai J, Ajamil AG, Bolander RP, Chu JJ, McAllister TW, Crisco JJ, Duma SM, Rowson S, Broglio SP, Guskiewicz KM, Mihalik JP, Anderson S, Schnebel B, Brolinson PG, Collins MW, and Greenwald RM, "Estimated brain tissue response following impacts associated with and without diagnosed concussion," Annals of Biomedical Engineering, vol. 46(6), pp. 819-830, 2018.
- 54 Bellamkonda S, Woodward SJ, Genemaras A, Beckwith JG, Greenwald RM, Maerlender AC, ***Campolettano E**, ***Gellner R**, Rowson S, Duma SM, Kelley ME, Jones DA, Urban JE, Stitzel JD, and Crisco JJ, "Head impact exposure in practices correlate with exposure in games for youth football players," Journal of Applied Biomechanics, <https://doi.org/10.1123/jab.2017-0207>, 2018.

- 53 ***Campolettano ET**, Brolinson PG, and Rowson S, 'Postural control and head impact exposure in youth football players: comparison of the balance error scoring system and a force plate protocol,' *Journal of Applied Biomechanics*, vol. 34(2), pp. 127-133, 2018.
- 52 Tyson AM, Duma SM, and Rowson S, "Laboratory evaluation of low-cost wearable sensors for measuring head impacts in sports," *Journal of Applied Biomechanics*, vol. 34(4) pp. 320-326, 2018.
- 51 Rowson S, Duma SM, Stemper BD, Shah A, Mihalik JP, Harezlak J, Riegen LD, Giza CC, DiFiori JP, Brooks A, Guskiewicz KM, Campbell D, McGinty G, Svoboda SJ, Cameron KL, Broglio SP, McAllister TW, and McCrea M, "Correlation of concussion symptom profile with head impact biomechanics: a case for individual-specific injury tolerance," *Journal of Neurotrauma*, vol. 35(4), pp. 681-690, 2018.
- 50 Asken BM, Bauer RM, Guskiewicz KM, McCrea MA, Schmidt JD, Giza CC, Snyder AR, Houck ZM, Kontos AP, McAllister TW, Broglio SP, Clugston JR, CARE Consortium Investigators, Anderson S, Bazarian J, Brooks A, Buckley T, Chrisman S, Collins M, DiFiori J, Duma S, Dykhuizen B, Eckner JT, Feigenbaum L, Hoy A, Kelly L, Langford TD, Lintner L, McGinty G, Mihalik J, Miles C, Ortega J, Port N, Putukian M, Rowson S, Svoboda S, "Immediate removal from activity after sport-related concussion is associated with shorter clinical recovery and less severe symptoms in collegiate student-athletes," *The American Journal of Sports Medicine*, vol. 46(6), pp. 1465-1474, 2018.
- 49 ***Bland ML**, Zuby DS, Mueller BC, and Rowson S, "Differences in the protective capabilities of bicycle helmets in real-world and standard-specified impact scenarios," *Traffic Injury Prevention*, vol. 19(sup1), pp. S158-S163, 2018.
- 48 Rowson B, ***Terrell EJ**, and Rowson S, "Quantifying the effect of the facemask on helmet performance," *Journal of Sports Engineering and Technology*, vol. 232(2), pp. 94-101, 2018.
- 47 ***Sproule DW** and Rowson S, "Comparison of impact performance between youth and varsity football helmets," *Journal of Sports Engineering and Technology*, vol. 231(4), pp. 374-380, 2017.
- 46 ***Campolettano ET**, ***Bland ML**, ***Gellner RA**, ***Sproule DW**, Rowson B, Tyson AM, Duma SM, and Rowson S, "Ranges of injury risks associated with impact from unmanned aircraft systems," *Annals of Biomedical Engineering*, vol. 45(12), pp. 2733-2741, 2017.
- 45 ***Campolettano ET**, ***Gellner RA**, Rowson S, "High magnitude head impact exposure in youth football," *Journal of Neurosurgery: Pediatrics*, vol. 20(6), pp. 604-612, 2017.
- 44 ***Cobb BR**, Tyson AM, Rowson S, "Head acceleration measurement techniques: reliability of angular rate sensor data in helmeted impact testing," *Journal of Sports Engineering and Technology*, vol. 232(2), pp. 176-181, 2017.
- 43 ***Sproule DW**, ***Campolettano ET**, and Rowson S, "Football helmet impact standards in relation to on-field impacts," *Journal of Sports Engineering and Technology*, vol. 231(4), pp. 317-323, 2017.
- 42 O'Connor KL, Rowson S, Duma SM, and Broglio SP, "Head-impact-measurement devices: a systematic review," *Journal of Athletic Training*, vol. 52(3), pp. 206-227, 2017.

- 41 ***Press JN** and Rowson S, "Quantifying head impact exposure in collegiate women's soccer," *Clinical Journal of Sports Medicine*, vol. 27(2), pp. 104-110, 2017.
- 40 ***Campolettano ET**, Rowson S, and Duma SM, "Drill-specific head impact exposure in youth football practice," *Journal of Neurosurgery: Pediatrics*, vol. 18(5), pp. 536-541, 2016.
- 39 Rowson S, ***Bland ML**, ***Campolettano ET**, ***Press JN**, Rowson B, ***Smith JA**, ***Sproule DW**, Tyson AM, and Duma SM, "Biomechanical perspectives on concussion in sports," *Sports Medicine and Arthroscopy Review*, vol. 24(3), pp. 100-107, 2016.
- 38 Maerlender AC, Masterson CJ, James, TD, Beckwith J, Brolinson PG, Crisco J, Duma S, Flashman LA, Greenwald R, Rowson S, Wilcox B, and McAllister TW, "Test-retest, retest, and retest: growth curve models of repeat testing with immediate post-concussion assessment and cognitive testing (ImPACT)," *Journal of Clinical and Experimental Neuropsychology*, vol. 38(8), pp. 869-874, 2016.
- 37 ***Cobb BR**, Zadnik AM, and Rowson S, "Comparative analysis of helmeted impact response of Hybrid III and National Operating Committee on Standards for Athletic Equipment headforms," *Journal of Sports Engineering and Technology*, vol. 230(1), pp. 50-60, 2016.
- 36 Rowson B, Rowson S, and Duma SM, "Hockey STAR: A methodology for assessing the biomechanical performance of hockey helmets." *Annals of Biomedical Engineering*, vol. 43(10), pp. 2429-2443, 2015.
- 35 ***Cobb BR**, MacAlister A, Young TJ, Kemper AR, Rowson S, and Duma SM, "Quantitative comparison of Hybrid III and NOCSAE headform shape characteristics and implications on football helmet fit," *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology*, 229(1), pp. 39-46, 2015.
- 34 Rowson S, Duma SM, Greenwald RM, Beckwith JG, Chu JJ, Guskiewicz KM, Mihalik JP, Crisco JJ, Wilcox BJ, McAllister TW, Maerlender AC, Broglio SP, Schnebel B, Anderson S, and Brolinson PG, "Can helmet design reduce the risk of concussion in football?" *Journal of Neurosurgery*, vol. 120(4), pp. 919-922, 2014.
- 33 Young TJ, Daniel RW, Rowson S, and Duma SM, "Head impact exposure in youth football: elementary school ages 7 to 8 years and the effect of returning players," *Clinical Journal of Sports Medicine*, vol. 24(5), pp. 416-421, 2014.
- 32 Rowson S, Duma SM, Greenwald RM, Beckwith JG, Chu JJ, Guskiewicz KM, Mihalik JP, Crisco JJ, Wilcox BJ, McAllister TW, Maerlender AC, Broglio SP, Schnebel B, Anderson S, and Brolinson PG, "Football helmet design and concussion response" *Journal of Neurosurgery*, vol. 121(2), pp. 492-494, 2014.
- 31 Daniel RW, Rowson S, and Duma SM, "Head impact exposure in youth football: middle school ages 12-14 years," *Journal of Biomechanical Engineering*, vol. 136(9):094501.
- 30 Duma SM and Rowson S, "RE: On the accuracy of the Head Impact Telemetry (HIT) System used in football helmets," *Journal of Biomechanics*, vol. 47(6), pp. 1557-1558, 2014.

- 29 Rowson S and Duma SM, "Brain injury prediction: assessing the combined probability of concussion using linear and rotational head acceleration," *Annals of Biomedical Engineering*, vol. 41(5), pp. 873-82, 2013.
- 28 Rowson S, Daniel RW, and Duma SM, "Biomechanical performance of leather and modern football helmets," *Journal of Neurosurgery*, vol. 119(3), pp. 805-809, 2013.
- 27 Rowson S, Daniel RW, and Duma SM, "Leather football helmets response," *Journal of Neurosurgery*, vol. 119(3), pp. 803-804, 2013.
- 26 Duma SM, Rowson S, Cobb B, MacAlister A, Young T, and Daniel R, "Effectiveness of helmets in the reduction of sports-related concussions in youth," *Institute of Medicine, Commissioned paper by the Committee on Sports-Related Concussion in Youth*, May 2013.
- 25 *Cobb BR, Urban JE, Davenport EM, Rowson S, Duma SM, Maldjian JA, Whitlow CT, Powers AK, and Stitzel JD, "Head impact exposure in youth football: elementary school ages 9-12 years and the effect of practice structure," *Annals of Biomedical Engineering*, vol. 41(12), pp. 2463-2473, 2013.
- 24 Beckwith JG, Greenwald RM, Chu JJ, Crisco JJ, Rowson S, Duma SM, Broglio SP, McAllister TW, Guskiewicz KM, Mihalik JP, Anderson S, Schnebel B, Brolinson PG, Lund B, and Collins MW, "Head impact exposure sustained by football players on days of diagnosed concussion," *Medicine & Science in Sports & Exercise*, vol. 45(4), pp. 737-46, 2013.
- 23 Beckwith JG, Greenwald RM, Chu JJ, Crisco JJ, Rowson S, Duma SM, Broglio SP, McAllister TW, Guskiewicz KM, Mihalik JP, Anderson S, Schnebel B, Brolinson PG, Lund B, and Collins MW, "Timing of concussion diagnosis is related to head impact exposure prior to injury," *Medicine & Science in Sports & Exercise*, vol. 45(4), pp. 747-54, 2013.
- 22 Rowson S and Duma SM, "The temperature inside football helmets during head impact: a five year study of collegiate football games," *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology*, vol. 227(1), pp. 12-9, 2013.
- 21 Duhaime AC, Beckwith JG, Maerlender AC, McAllister TW, Crisco JJ, Duma SM, Brolinson PG, Rowson S, Flashman LA, Chu JJ, and Greenwald RM, "Spectrum of acute clinical characteristics of diagnosed concussions in college athletes wearing instrumented helmets," *Journal of Neurosurgery*, vol. 117(6), pp. 1092-9, 2012.
- 20 Rowson S and Duma SM, "The Virginia Tech response," *Annals of Biomedical Engineering*, vol. 40(12), pp. 2512-2518, 2012.
- 19 Daniel RW, Rowson S, and Duma SM, "Head impact exposure in youth football," *Annals of Biomedical Engineering*, vol. 40(4), pp. 976-981, 2012.
- 18 Rowson S, Duma SM, Beckwith JG, Chu JJ, Greenwald RM, Crisco JJ, Brolinson PG, Duhaime AC, McAllister TW, Maerlender AC, "Rotational head kinematics in football impacts: an injury risk function for concussion," *Annals of Biomedical Engineering*, vol. 40(1), pp. 1-13, 2012.

- 17 Crisco JJ, Therrien B, Machan JT, McAllister TW, Duhaime AC, Duma S, Rowson S, Beckwith JG, Chu JJ, Greenwald RM, "Magnitude of head impact exposures in individual collegiate football players," *Journal of Applied Biomechanics*, vol. 28(2), pp. 174-183, 2012.
- 16 Funk JR, Rowson S, Daniel RW, and Duma SM, "Validation of concussion risk curves for collegiate football players derived from HITS data," *Annals of Biomedical Engineering*, vol. 40(1), pp. 79-89, 2012.
- 15 Beyer JA, Rowson S, and Duma SM, "Concussions experienced by major league baseball catchers and umpires: field data and experimental baseball impacts," *Annals of Biomedical Engineering*, vol. 40(1), pp. 150-159, 2012.
- 14 Rowson S, Beckwith J, Chu J, Leonard D, Greenwald R, and Duma S, "A six degree of freedom head acceleration measurement device for use in football," *Journal of Applied Biomechanics*, vol. 27(1), pp. 8-14, 2011.
- 13 Cormier J, Manoogian S, Bisplinghoff J, Rowson S, Santago A, McNally C, Duma SM, and Bolte J, "The tolerance of the Maxilla to blunt impact," *Journal of Biomechanical Engineering*, vol. 133(6), pp. 064501, 2011.
- 12 Rowson S and Duma SM, "Development of the STAR evaluation system for football helmets: integrating player head impact exposure and risk of concussion," *Annals of Biomedical Engineering*, vol. 39(8), pp. 2130-40, 2011.
- 11 Crisco JJ, Wilcox BJ, Beckwith JG, Chu JJ, Duhaime AC, Rowson S, Duma SM, Maerlender AC, McAllister TW, and Greenwald RM, "Head impact exposure in collegiate football players," *Journal of Biomechanics*, vol. 44(15), pp. 2673-2678, 2011.
- 10 Kimpara H, Nakahira Y, Iwamoto M, Rowson S, and Duma S, "Head injury prediction methods based on 6 degree of freedom head acceleration measurements during impact," *International Journal of Automotive Engineering*, vol. 2(2), pp. 13-19, 2011.
- 9 Cormier J, Manoogian S, Bisplinghoff J, Rowson S, Santago A, McNally C, Duma S, and Bolte J, "The tolerance of the frontal bone to blunt impact," *Journal of Biomechanical Engineering*, vol. 133(2), pp. 021003, 2011.
- 8 Duma SM and Rowson S, "Past, Present, and Future of Head Injury Research," *Exercise & Sports Sciences Reviews*, vol. 39(1), pp. 2-3, 2011.
- 7 Shain KS, Madigan ML, Rowson S, and Duma SM, "Analysis of the ability of catcher's masks to attenuate head accelerations upon impact with a baseball," *Clinical Journal of Sports Medicine*, vol 20(6), pp. 422-27, 2010.
- 6 Cormier J, Manoogian S, Bisplinghoff J, Rowson S, Santago A, McNally C, Duma S, and Bolte J, "Biomechanical response of the human face and corresponding biofidelity of the FOCUS headform," *SAE Int. J. Passeng. Cars – Mech. Syst*, vol. 3(1), pp. 842-859, 2010.
- 5 Rowson S, McNally C, and Duma SM, "Can footwear affect Achilles tendon loading?" *Clinical Journal of Sports Medicine*, vol. 20(5), pp. 344-49, 2010.

- 4 Cormier J, Manoogian S, Bisplinghoff J, Rowson S, Santago A, McNally C, Duma S, and Bolte J, "The tolerance of the nasal bone to blunt impact," Association for the Advancement of Automotive Medicine, vol. 54: 2010.
- 3 Rowson S, Brolinson PG, Goforth M, Dietter D, and Duma SM, "Linear and angular head accelerations measurements in collegiate football," Journal of Biomechanical Engineering, vol. 131(6), pp. 061016, 2009.
- 2 Rowson S, McNeely DE, Brolinson PG, and Duma SM, "Biomechanical analysis of football neck collars," Clinical Journal of Sports Medicine, vol. 18, pp. 316-21, 2008.
- 1 Takhounts EG, Ridella SA, Hasija V, Tannous RE, Campbell JQ, Malone D, Danelson K, Stitzel J, Rowson S, and Duma S, "Investigation of traumatic brain injuries using the next generation of simulated injury monitor (SIMon) finite element head model," Stapp Car Crash Journal, vol. 52, pp. 1-31, 2008.

REFEREED CONFERENCE PAPERS

- 27 ***Bland ML**, McNally C, and Rowson S, "Headform and neck effects on dynamic response in bicycle helmet oblique impact testing," IRCOBI conference proceedings, 2018.
- 26 ***Campolettano ET**, ***Gellner RA**, and Rowson S, "Relationship between impact velocity and resulting head accelerations during head impacts in youth football," IRCOBI conference proceedings, 2018.
- 25 ***Campolettano ET** and Rowson S, "Effects of a season of youth football on static postural control," Biomedical Sciences Instrumentation, Vol 54, 2018.
- 24 ***Gellner RA**, ***Morris TP**, and Rowson S, "Method for determining the structural response of helmet shells during dynamic loading," Biomedical Sciences Instrumentation, Vol 54, 2018.
- 23 Rowson B, ***Bland ML**, Rowson S, and Duma SM, "Quantifying head impact duration: analysis of laboratory helmet evaluation systems," Biomedical Sciences Instrumentation, Vol 54, 2018.
- 22 ***Gellner RA**, ***Campolettano ET**, and Rowson S, "Association between tackling technique and head acceleration magnitude in youth football players," Biomedical Sciences Instrumentation, Vol 54, 2018.
- 21 ***Campolettano ET**, ***Gellner RA**, and Rowson S, "Assessing static and dynamic postural control in a healthy population," Biomedical Sciences Instrumentation, Vol 54, 2018.
- 20 ***Morris TP**, ***Gellner RA**, and Rowson S, "Head injury risk associated with baseball stiffness as a function of player age," Biomedical Sciences Instrumentation, Vol 54, 2018.
- 19 ***Kieffer EE**, ***Bland ML**, and Rowson S, "Assessing the ability of women's lacrosse helmets to reduce risk of head injury," Biomedical Sciences Instrumentation, Vol 54, 2018.

- 18 ***Bland ML**, McNally CM, and Rowson S, "Effect of anvil angle on impact kinematics in laboratory evaluation of bicycle helmets," Biomedical Sciences Instrumentation, Vol 54, 2018.
- 17 Tyson AM, ***Kieffer EE**, and Rowson S, "Effect of facemask weight on helmet performance," Biomedical Sciences Instrumentation, Vol 54, 2018.
- 16 ***Bland ML**, Mueller BC, Zuby DS, and Rowson S, "Relationships between bicycle helmet design characteristics, price, and impact attenuation," International Cycling Safety Conference, 2017.
- 15 ***Cobb BR**, Rowson S, and Duma SM, "Head impact frequency in youth American football, ages 9-13," International Society of Biomechanics in Sports, vol. 32, pp 361-364, 2014.
- 14 Young TJ, Rowson S, and Duma SM, "High magnitude head impacts experienced during youth football practices," Biomedical Sciences Instrumentation, Vol. 50, 2014.
- 13 MacAlister A, Young T, Daniel RW, Rowson S, and Duma SM, "Methodology for mapping football head impact exposure to helmet pads for repeated loading testing," Biomedical Sciences Instrumentation, Vol. 50, 2014.
- 12 ***Cobb BR**, Rowson S, and Duma SM, "Age-related differences in head impact exposure of 9-13 year old football players," Biomedical Sciences Instrumentation, Vol. 50, 2014.
- 11 Daniel RW, Rowson S, and Duma SM, "Head acceleration measurements in middle school football," Biomedical Sciences Instrumentation, Vol. 50, 2014.
- 10 Alphonse VD, Kemper AR, Rowson S, and Duma SM, "Eye injury risk associated with remote control toy helicopter blades," Biomedical Sciences Instrumentation, Vol. 48, pp. 20-6, 2012.
- 9 Takhounts EG, Hasija V, Ridella SA, Rowson S, and Duma SM, "Kinematic rotational brain injury criterion (BRIC)," Enhanced Safety of Vehicles, Paper No. 11-0263-0, 2011.
- 8 Kimpara H, Nakahira Y, Iwamoto M, Rowson S, and Duma S, "Head injury prediction methods based on 6 degree of freedom head acceleration measurements during impact," Society of Automotive Engineers of Japan, 20105118, 2010.
- 7 Rowson S, McNally C, and Duma SM, "In situ measurement of Achilles tendon tension during dorsiflexion," Biomedical Sciences Instrumentation, Vol. 45, pp. 18-23, 2009.
- 6 Rowson S, Goforth MW, Dietter D, Brolinson PG, and Duma SM, "Correlating cumulative sub-concussive impacts in football with player performance," Biomedical Sciences Instrumentation, Vol. 45, pp. 113-118, 2009.
- 5 Duma S and Rowson S, "Every Newton hertz: a micro to macro approach investigating brain injury," Conf Proc IEEE Eng Med Biol Soc, pp. 1123-6, 2009.
- 4 Rowson S, McNeely DE, and Duma SM, "Force transmission to the mandible by chin straps during head impacts in football," Biomedical Sciences Instrumentation, Vol. 44, pp. 195-200, 2008.

- 3 Rowson S, McNeely DE, and Duma SM, "Differences in Hybrid III and THOR-NT neck response in extension using matched tests with football neck collars," Biomedical Sciences Instrumentation, Vol. 44, pp. 165-170, 2008.
- 2 Rowson S, McNeely DE, and Duma SM, "Lateral bending biomechanical analysis of neck protection devices used in football," Biomedical Sciences Instrumentation, Vol. 43, pp. 200-205, 2007.
- 1 Funk JR, Duma SM, Manoogian SJ, and Rowson S, "Biomechanical risk estimates for mild traumatic brain injury," Association for the Advancement of Automotive Medicine, vol. 51, pp. 343-61, 2007.

PRESENTED CONFERENCE ABSTRACTS

- 98 ***Campolettano E, *Gellner R**, and Rowson S, "Relationship between impact velocity and resulting head acceleration during head impacts in youth football," Biomedical Engineering Society Scientific Meeting, Atlanta, GA, 2018.
- 97 ***Kieffer E, *Bland M**, and Rowson S, "Assessing the ability of lacrosse helmets to reduce risk of head injury," Biomedical Engineering Society Scientific Meeting, Atlanta, GA, 2018.
- 96 Stemper B, Shah A, Rowson S, Duma S, Mihalik J, Harezlak J, Riggen L, Broglio S, McAllister T, and McCrea M, "Comparison of head impact exposure between concussed and non-concussed football athletes," Biomedical Engineering Society Scientific Meeting, Atlanta, GA, 2018.
- 95 ***Bland M**, McNally C, and Rowson S, "An objective evaluation system for assessing the efficacy of bicycle helmets," Biomedical Engineering Society Scientific Meeting, Atlanta, GA, 2018.
- 94 ***Campolettano E**, Madigan M, and Rowson S, "Postural control during dual task interference in a youth population," Biomedical Engineering Society Scientific Meeting, Atlanta, GA, 2018.
- 93 Stemper BD, Shah AS, Rowson S, Duma S, Harezlak J, Mihalik J, Riggen L, Cameron K, Campbell D, Jackson J, McGinty G, Svoboda S, Broglio S, McAllister T, and McCrea M, "Mechanisms of concussion in football athletes at the military service academies: single impact versus repetitive head impact exposure," Military Health System Research Symposium, Kissimmee FL, 2018.
- 92 ***Campolettano E**, Rowson S, Duma S, Stemper B, Shah A, Mihalik J, Harezlak J, McAllister T, Broglio S, and McCrea M, "Factors affecting head impact exposure in college football practices: a multi-institutional study," World Congress of Biomechanics, Dublin Ireland, 2018.
- 91 Tyson A and Rowson S, "Effects of stiffness and thickness on soccer head gear performance," World Congress of Biomechanics, Dublin Ireland, 2018.

- 90 Stemper B, Shah A, Rowson S, Duma S, Mihalik J, Jarezlak J, McAllister T, Broglio S, and McCrea M, "Characteristics of head impact exposure in concussed and non-concussed college American football athletes," World Congress of Biomechanics, Dublin Ireland, 2018.
- 89 Duma S and Rowson S, "Brains, strains, and automobiles: concussion biomechanics and instrumentation," World Congress of Biomechanics, Dublin Ireland, 2018.
- 88 ***Campolettano E, *Bland M, *Gellner R, *Sproule D**, Rowson B, Tyson A, Duma S, and Rowson S, "Ranges of injury risk associated with impact from unmanned aircraft," World Congress of Biomechanics, Dublin Ireland, 2018.
- 87 ***Bland ML**, McNally C, and Rowson S, "Effects of varying headform and neck configuration on kinematic response during bicycle helmet testing," World Congress of Biomechanics, Dublin Ireland, 2018.
- 86 ***Bland ML**, McNally C, and Rowson S, "Differences in the ability of bicycle helmets to reduce risk of head injury," OSU 13th Annual Injury Biomechanics Symposium, 2017.
- 85 ***Bland M**, McNally C, and Rowson S, "Effects of headform and neck on dynamic response during reconstruction of cyclist head impacts," Biomedical Engineering Society Scientific Meeting, Phoenix, AZ, 2017.
- 84 ***Campolettano E, *Gellner R**, and Rowson S, "Characterizing high magnitude head impact exposure in youth football," Biomedical Engineering Society Scientific Meeting, Phoenix, AZ, 2017.
- 83 ***Campolettano E, *Bland M, *Gellner R, *Sproule D**, Rowson B, Tyson A, Duma S, and Rowson S, "Quantifying the range of injury risk to the head and neck from unmanned aircraft systems," Biomedical Engineering Society Scientific Meeting, Phoenix, AZ, 2017.
- 82 Rowson B, Rowson S, and Duma S, "Assessing brain injury criteria through reconstructions of head impacts in football," Biomedical Engineering Society Scientific Meeting, Phoenix, AZ, 2017.
- 81 ***Gellner R, *Campolettano E**, and Rowson S, "Effect of tackling form on head acceleration in youth football," Biomedical Engineering Society Scientific Meeting, Phoenix, AZ, 2017.
- 80 ***Bland ML**, McNally C, Zuby DS, Mueller BC, and Rowson S, "Impact performance of bicycle helmets during real-world oblique impacts," SB3C, Tucson, AZ, 2017.
- 79 ***Campolettano E, *Gellner R**, and Rowson S, "High magnitude head impact exposure in youth football games," SB3C Tucson, AZ, 2017.
- 78 ***Gellner RA, *Campolettano ET**, and Rowson S, "Characterization of elevated head impact exposure between individual youth football players," SB3C, Tucson, AZ, 2017.
- 77 Rowson B, Rowson S, and Duma S, "Characterizing brain injury criteria for concussion through reconstructions of collegiate football head impacts," SB3C, Tucson, AZ, 2017.

- 76 Rowson B, Rowson S, Duma SM, "Evaluating the ability of head injury criteria to predict concussion through reconstructions of collegiate football head impacts," Neurotrauma Symposium, Snowbird, UT, 2017.
- 75 Sanchez E, Gabler L, Rowson B, Rowson S, Duma S, Panzer MB, "Brain strain patterns associated with football impact reconstructions," Neurotrauma Symposium, Snowbird, UT, 2017.
- 74 ***Sproule D**, ***Campolettano E**, and Rowson S, "Relating on-field head impacts to standards testing: comparison of youth and adult football helmets," Biomedical Engineering Society Scientific Meeting, Minneapolis, MN, 2016.
- 73 ***Bland M** and Rowson S, "Differences in the ability of bicycle helmets to reduce risk of head injury," Biomedical Engineering Society Scientific Meeting, Minneapolis, MN, 2016.
- 72 Tyson A, Rowson B, and Rowson S, "A K-12 engineering education module: hands-on approach to helmet design," Biomedical Engineering Society Scientific Meeting, Minneapolis, MN, 2016.
- 71 Miller L, Kelley M, Jones D, Urban J, Rowson S, and Stitzel J, "Evaluation of brain response following head impact in youth athletes using an anatomically accurate finite element head model," Biomedical Engineering Society Scientific Meeting, Minneapolis, MN, 2016.
- 70 ***Campolettano E**, Rowson S, and Duma S, "Drill-specific head impact exposure in youth football practice," Biomedical Engineering Society Scientific Meeting, Minneapolis, MN, 2016.
- 69 Rowson B, Tyson A, ***Cobb B**, Rowson S, and Duma S, "Biomechanical performance of hockey helmets," Biomedical Engineering Society Scientific Meeting, Minneapolis, MN, 2016.
- 68 ***Sproule DW** and Rowson S, "Biomechanical comparison of youth and adult football helmets: standards testing," SB3C, National Harbor, 2016.
- 67 ***Bland ML** and Rowson S, "Differences in the ability of bicycle helmets to reduce risk of head injury," SB3C, National Harbor, 2016.
- 66 Rowson B, Rowson S, and Duma S, "Assessing the ability of hockey helmets to reduce concussion risk," SB3C, National Harbor, 2016.
- 65 ***Campolettano E**, Rowson S, and Duma S, "Drill-specific head impact exposure in youth football practice," SB3C, National Harbor, 2016.
- 64 Tyson AM, Rowson S, and Duma SM, "Laboratory evaluation of head impact sensors," SB3C, National Harbor, 2016.
- 63 Rowson S and ***Terrell E**, "Do facemasks affect helmet performance?" Biomedical Engineering Society Scientific Meeting, Tampa, FL, 2015.

- 62 ***Cobb B**, Zadnik A, and Rowson S, "Impact response characteristics of the Hybrid III and NOCSAE headforms," Biomedical Engineering Society Scientific Meeting, Tampa, FL, 2015.
- 61 Tyson A, ***Cobb B**, Rowson S, and Duma S, "Comparing the ability of head impact sensors to measure head kinematics," Biomedical Engineering Society Scientific Meeting, Tampa, FL, 2015.
- 60 Rowson B, Rowson S, and Duma S, "Development of a methodology for assessing the biomechanical performance of hockey helmets," Biomedical Engineering Society Scientific Meeting, Tampa, FL, 2015.
- 59 ***Press J** and Rowson S, "Quantifying head impact exposure in collegiate women's soccer," Biomedical Engineering Society Scientific Meeting, Tampa, FL, 2015.
- 58 Rowson S and ***Terrell E**, "The effect of facemasks on the impact performance of helmets," SB3C, Snowbird, UT, 2015.
- 57 ***Press J** and Rowson S, "Quantifying head impact exposure in collegiate women's soccer," SB3C, Snowbird, UT, 2015.
- 56 Beeman SM, Rowson S, and Duma SM, "Head impact response resulting from forceful impact with toy swords by pediatric males," SB3C, Snowbird, UT, 2015.
- 55 Rowson B, Rowson S, and Duma SM, "Effect of neck cable tension during helmeted head impact," SB3C, Snowbird, UT, 2015.
- 54 Zadnik AM, Rowson S, and Duma SM, "Assessing head impact sensor validity in the laboratory," SB3C, Snowbird, UT, 2015.
- 53 Rowson S, Daniel R, ***Cobb B**, Duma S, "Assessment of angular rate sensors to measure rotational head acceleration during impact testing," Biomedical Engineering Society Scientific Meeting, San Antonio, TX, 2014.
- 52 ***Cobb B**, MacAlister A, Young T, Kemper A, Rowson S, and Duma S, "Quantitative analysis of dummy headform shape for impact testing with football helmets," Biomedical Engineering Society Scientific Meeting, San Antonio, TX, 2014.
- 51 ***Cobb B**, Rowson S, and Duma S, "Quantitative analysis of biomechanical data with random measurement error," Biomedical Engineering Society Scientific Meeting, San Antonio, TX, 2014.
- 50 Beeman S, Rowson S, and Duma S, "Quantification of toy sword kinematics with male and female pediatric volunteers," Biomedical Engineering Society Scientific Meeting, San Antonio, TX, 2014.
- 49 ***Cobb BR**, Rowson S, and Duma SM, "Quantifying uncertainty in distribution analyses of biomechanical data with random error," World Congress of Biomechanics, Boston, MA, 2014.

- 48 ***Cobb BR**, MacAlister A, Young TJ, Kemper AR, Rowson S, and Duma SM, "Quantitative comparison of dummy headform shape and implications on laboratory testing of football helmets," World Congress of Biomechanics, Boston, MA, 2014.
- 47 Wilcox BJ, Beckwith JG, Greenwald RM, Raukar NP, Chu JJ, McAllister TW, Flashman LA, Maerlender AC, Duhaime AC, Rowson S, Duma SM, and Crisco JJ, "Sex differences in the rate and biomechanics of head impacts associated with diagnosed concussions," World Congress of Biomechanics, Boston, MA, 2014.
- 46 Daniel RW, Rowson S, and Duma SM, "Comparison of head impact exposure between skill and line position players in middle school football," World Congress of Biomechanics, Boston, MA, 2014.
- 45 ***Cobb BR**, Rowson S, and Duma SM, "Head impact frequency in youth American football, ages 9-13," International Society of Biomechanics in Sports, Johnson City, TN, 2014.
- 44 Rowson S, ***Cobb BR**, Daniel RW, MacAlister A, Young T, Kemper A, and Duma SM, "Rotational head acceleration measurement techniques and headform characteristics: implications on helmet impact testing," Proceedings of the Forty-First International Workshop on Human Subjects for Biomechanical Research, Orlando, FL, 2013.
- 43 Rowson S, Beyer JA, and Duma SM, "Characterization and experimental analysis of concussive impacts experienced by major league baseball catchers and umpires," Biomedical Engineering Society Scientific Meeting, Seattle, WA, 2013.
- 42 Daniel RW, Rowson S, and Duma SM, "Head impact exposure in middle school football," Biomedical Engineering Society Scientific Meeting, Seattle, WA, 2013.
- 41 Young TJ, Daniel RW, Rowson S, and Duma SM, "Head impact exposure in youth football: elementary school ages 7 to 8 years and the effect of returning players," Biomedical Engineering Society Scientific Meeting, Seattle, WA, 2013.
- 40 ***Cobb BR**, Urban JE, Davenport EM, Rowson S, Duma SM, Maldjian JA, Whitlow CT, Powers AK, and Stitzel JD, "Head impact exposure in youth football: elementary school ages 9 to 12 years and the effect of practice structure," Biomedical Engineering Society Scientific Meeting, Seattle, WA, 2013.
- 39 Urban JE, Daniel RW, ***Cobb BR**, Young TJ, Davenport EM, Rowson S, Powers AK, Duma SM, and Stitzel JD, "Cumulative exposure risk of concussion for youth and high school football head impacts," Ohio State Injury Biomechanics Symposium, Columbus, OH, 2013.
- 38 Rowson S, Daniel RW, Young T, ***Cobb BR**, Urban JE, Davenport EM, Stitzel JD, Powers A, Maldjian J, Whitlow C, and Duma SM, "Head acceleration measurements during head impact in pediatric populations," Proceedings of the Fortieth International Workshop on Human Subjects for Biomechanical Research, Savannah, GA, 2012.
- 37 Rowson S and Duma SM, "Predicting brain injury: the combined probability of concussion," Biomedical Engineering Society Scientific Meeting, Atlanta, GA, 2012.
- 36 Rowson S, Daniel RW, and Duma SM, "Head impact exposure in youth football," Biomedical Engineering Society Scientific Meeting, Atlanta, GA, 2012.

- 35 Rowson S, Daniel R, Young T, *Cobb B, Stitzel J, Powers A, Maldjian J, Godwin D, Whitlow C, Urban J, Moody E, and Duma SM, "Head acceleration measurements during head impact in pediatric populations," Proceedings of the Fortieth International Workshop on Human Subjects for Biomechanical Research, Savannah, GA, 2012.
- 34 Rowson S and Duma SM, "Assessing the capability of helmets to prevent concussion: principles and applications of the STAR evaluation system," American Society of Mechanical Engineers Summer Bioengineering Conference, Farjardo, Puerto Rico, 2012.
- 33 Daniel R, Rowson S, and Duma SM, "Linear and angular head acceleration measurement collection in pediatric football," American Society of Mechanical Engineers Summer Bioengineering Conference, Farjardo, Puerto Rico, 2012.
- 32 Rowson S and Duma SM, "Brain injury prediction: assessing the combined probability of concussion," Canadian Society of Biomechanics Conference, Burnaby, British Columbia, Canada, 2012.
- 31 Beckwith J, Greenwald R, Chu J, Crisco J, Rowson S, Duma S, Broglio S, McAllister T, Guskiewicz K, Mihalik J, Anderson S, Schnebel B, Brolinson G, Lund B, Collins M, "Severity and frequency of head impacts sustained by football player on days of diagnosed concussion," Ninth World Congress on Brain Injury, Edinburgh, Scotland, 2012.
- 30 Beckwith J, Greenwald R, Chu J, Crisco J, Rowson S, Duma S, Broglio S, McAllister T, Guskiewicz K, Mihalik J, Anderson S, Schnebel B, Brolinson G, Lund B, Collins M, "Timing of concussion diagnosis is related to head impact exposure prior to injury," Ninth World Congress on Brain Injury, Edinburgh, Scotland, 2012.
- 29 Crisco JJ, Wilcox BJ, Beckwith JG, Chu JJ, Duhaime AC, Rowson S, Duma SM, Maerlender AC, and Greenwald RM, "Biomechanics of head impacts in American football players," American Society of Biomechanics Conference, Long Beach, CA, 2011.
- 28 Rowson S and Duma SM, "Rotational head acceleration and velocity associated with concussion in humans," Biomedical Engineering Society Scientific Meeting, Hartford, CT, 2011.
- 27 Rowson S and Duma SM, "Senior design capstone project: expanding on the basics," Biomedical Engineering Society Scientific Meeting, Hartford, CT, 2011.
- 26 Daniel RW, Rowson S, Duma S, Mihalik J, and Guskiewicz K, "Investigation of effective mass differences for helmet to helmet impacts in football: role of the neck and implications on injury," Biomedical Engineering Society Scientific Meeting, Hartford, CT, 2011.
- 25 Rowson S and Duma SM, "Rotational acceleration and velocity associated with concussions in humans," American Society of Mechanical Engineers Summer Bioengineering Conference, Farmington, PA, 2011.
- 24 Rowson S and Duma S, "Development of the STAR evaluation system for football helmets," SBES Student Symposium, Blacksburg, VA, 2011.

- 23 Rowson S and Duma S, "Relationships between linear and angular head acceleration from impact to human volunteers," Biomedical Engineering Society Scientific Meeting, Austin, TX, 2010.
- 22 Rowson S, McNally C, and Duma S, "Effect of shoe laces on in situ measurement of Achilles tendon mechanics," Biomedical Engineering Society Scientific Meeting, Austin, TX, 2010.
- 21 Rowson S, Shain K, Madigan M, and Duma S, "Head accelerations from baseballs impacting catcher's masks and implications on injury," Biomedical Engineering Society Scientific Meeting, Austin, TX, 2010.
- 20 Funk JR, Duma SM, Manoogian SJ, and Rowson S, "Development of a concussion risk curve using biomechanical data from collegiate football players," Biomedical Engineering Society Scientific Meeting, Austin, TX, 2010.
- 19 Cormier J, Manoogian S, Bisplinghoff J, Rowson S, Santago A, McNally C, Bolte J, Duma S, "The tolerance of the nasal bone to blunt impact," Biomedical Engineering Society Scientific Meeting, Austin, TX, 2010.
- 18 Cormier J, Manoogian S, Bisplinghoff J, Rowson S, Santago A, McNally C, Bolte J, Duma S, "The influence of the frontal sinus on fracture tolerance," Biomedical Engineering Society Scientific Meeting, Austin, TX, 2010.
- 17 Danelson K, Rowson S, Duma S, Stitzel J, "Assessment of Strain Patterns in the Brain from Head Acceleration from Collegiate Football Players," Biomedical Engineering Society Scientific Meeting, Austin, TX, 2010.
- 16 Rowson S and Duma S, "In situ Achilles tendon measurement and the effect of footwear," SBES Student Symposium, Winston-Salem, NC, 2010.
- 15 Danelson K, Rowson S, Duma S, Stitzel J, "Assessment of strain patterns in the brain from real-world acceleration data from collegiate football players," Ohio State Injury Biomechanics Symposium, Columbus, OH, 2010.
- 14 Rowson S and Duma SM, "High impact head accelerations from human volunteers," Institute for Critical Technology and Applied Science Research Day, Blacksburg, VA, 2010.
- 13 Rowson S and Duma S, "High impact head accelerations in human volunteers," Biomedical Engineering Society Scientific Meeting, Pittsburgh, PA, 2009.
- 12 Rowson S, McNally C, and Duma S, "Effect of footwear on in situ measurement of Achilles tendon mechanics," Biomedical Engineering Society Scientific Meeting, Pittsburgh, PA, 2009.
- 11 Cormier J, Bisplinghoff J, Manoogian S, Rowson S, Santago A, McNally C, Bolte J, and Duma S, "The tolerance and response of the frontal bone to blunt impact," Ohio State Injury Biomechanics Symposium, Columbus, OH, 2009.
- 10 Rowson S and Duma S, "Every Newton hertz: investigating the mechanisms of brain injury," SBES Student Symposium, Blacksburg, VA, 2009.

- 9 Duma S, Rowson S, and Brolinson G, "Neck protective devices," American Osteopathic Association Scientific Meeting, Las Vegas, NV, 2008.
- 8 Brolinson G, Duma S, and Rowson S, "Clinical and biomechanical implications of Achilles tendon injury," American Osteopathic Association Scientific Meeting, Las Vegas, NV, 2008.
- 7 Duma S, Rowson S, Hardy W, Brolinson G, and Goforth M, "The biomechanical basis of mild traumatic brain injury," American Osteopathic Association Scientific Meeting, Las Vegas, NV, 2008.
- 6 Rowson S and Duma SM, "Biomechanical response of the human head to dynamic impact," SBES Student Symposium, Winston-Salem, NC, 2008.
- 5 Rowson S and Duma S, "Evaluation of the load limiting capabilities of football neck collars using anthropomorphic test devices," Ohio State Injury Biomechanics Symposium, Columbus, OH, 2008.
- 4 Rowson S, "Biomechanical response of the human head to dynamic impact," Torgersen Research Symposium, Blacksburg, VA, 2008.
- 3 Rowson S, Chu JJ, Beckwith JG, Greenwald RM, Stitzel JD, Kimpara H, and Duma SM, "Six degree of freedom head acceleration measurements in football players," Proceedings of the Thirty-Fifth International Workshop on Human Subjects for Biomechanical Research, San Diego, CA, 2007.
- 2 Kadlowec J, Maltese M, DeSimone A, Rowson S, and Saffioti J, "Comparison of the mechanical performance of the Q3 and Hybrid III 3C three-yr-old dummy necks," 5th World Congress of Biomechanics, Munich, Germany, 2006.
- 1 Funk JR, Duma SM, Manoogian SJ, and Rowson S, "Development of concussion risk curves based on head impact data from collegiate football players." Proceedings of the Thirty-Fourth International Workshop on Human Subjects for Biomechanical Research, Dearborn, MI, 2006.

INVITED PRESENTATIONS

- 12 Rowson S, "Concussion and repetitive head impact exposure," The Sports Concussion Conference, American Academy of Neurology, Indianapolis IN, 2018.
- 11 Rowson S, "Biomechanics of head trauma," Chronic Traumatic Encephalopathy Conference, Boston, MA, 2016.
- 10 Rowson S, "Repetitive head impacts and telemetry monitoring: state of the science," National Summit on Sports Concussion: Sports and Concussion Outcomes, Los Angeles, CA, 2016.
- 9 Rowson S, "The Virginia Tech Helmet Ratings: Evaluation Protective Headgear in the Lab," Impact Mitigating Materials for Body Protection, National Institute of Standards and Technology (NIST), Chicago, IL, 2016.

- 8 Rowson S, "Are helmet designs capable of preventing concussion?" 3rd Annual Matthew Gfellar Neurotrauma Symposium, Chapel Hill, NC, 2015.
- 7 Rowson S, "An Overview of the Virginia Tech Helmet Ratings," ASTM, Anaheim, CA, 2015.
- 6 Rowson S, "Biomechanically characterizing mild traumatic brain injury issuing helmet instrumentation," State-of-the-Science Meeting on the Biomedical Basis for Mild Traumatic Brain Injury (mTBI) Environmental Sensor Threshold Values, DOD Blast Injury Research Program, McLean, VA, 2014.
- 5 Rowson S, "The ability of helmets to reduce concussion risk," Do Helmets Prevent Concussions, Defense and Veterans Brain Injury Center Webinar, 2014.
- 4 Rowson S, "Biomechanics of concussion: considerations on the mechanisms of injury and reduction of risk," The Sports Concussion Conference, American Academy of Neurology, Chicago, IL, 2014.
- 3 Rowson S, "Advances in telemetry for monitoring collisions and potential concussions: implications for sport specific best practices," National Summit on Sports Concussion, Los Angeles, CA, 2014.
- 2 Rowson S, "The Ability of Helmets to Reduce the Probability of Concussion," Keep Your Edge: Hockey Sports Medicine Meeting, American Orthopaedic Society for Sports Medicine, Toronto, Canada, 2012.
- 1 Rowson S, "From the lab to the field: translating biomechanical research to reduce concussions in sports," Canadian Society of Biomechanics Conference, Burnaby, British Columbia, Canada, 2012

PATENTS

- 1 Duma SM, Rowson S, McNally C, "A methodology for assessing the biomechanical performance of helmets," VTIP 15-007, US Patent 9,797,821, Issued 10/24/2017.

WEBSITES

- 1 Virginia Tech Helmet Ratings, www.vt.edu/helmet

Prior to the Virginia Tech Helmet Ratings, there was no information available to consumers on the relative performance of helmets even though large differences in protection existed between helmets. The Virginia Tech Helmet Ratings evaluate the ability of helmets to reduce concussion risk and then 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.

PROFESSIONAL SERVICE

JOURNAL ASSOCIATE EDITORSHIPS

- 1 Associate Editor, Journal of Applied Biomechanics, 2018 – present

PROFESSIONAL COMMITTEES

- 1 Scientific Advisory Committee, National Operating Committee on Standards for Athletic Equipment, 2017 – present

CONFERENCE SESSION CHAIR

- 7 BMES Annual Meeting, Human Performance and Sports Biomechanics II, 2018
- 6 World Congress of Biomechanics, Brain Injury Mechanics II, 2018
- 5 World Congress of Biomechanics, Brain Injury Mechanics I, 2018
- 4 BMES Annual Meeting, Head Injury Biomechanics I, 2017
- 3 SB3C Annual Meeting, Measurement in Movement and Trauma, 2017
- 2 BMES Annual Meeting, Head Injury Molecular to Macro: Simulation and Protection, 2015
- 1 SB3C Annual Meeting, Injury Biomechanics II – Head to Foot, Modeling, Risk, 2015

CONFERENCE ABSTRACT REVIEWER

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| 10 | BMES Annual Meeting | 2018 |
| 9 | World Congress of Biomechanics | 2018 |
| 8 | BMES Annual Meeting | 2017 |
| 7 | SB3C Annual Meeting | 2017 |
| 6 | BMES Annual Meeting | 2016 |
| 5 | SB3C Annual Meeting | 2016 |
| 4 | BMES Annual Meeting | 2015 |
| 3 | SB3C Annual Meeting | 2015 |
| 2 | BMES Annual Meeting | 2014 |
| 1 | RMBS Annual Meeting | 2012 |

JOURNAL PAPER REVIEWER

- | | | |
|----|---|----------------|
| 31 | European Journal of Sport Science | 2017 – Present |
| 30 | The Physician and Sportsmedicine | 2017 – Present |
| 29 | Clinical Biomechanics | 2017 – Present |
| 28 | IEEE Journal of Biomedical and Health Informatics | 2017 – Present |
| 27 | New England Journal of Medicine | 2017 – Present |
| 26 | Injury Prevention | 2017 – Present |
| 25 | Journal of Neuroscience | 2017 – Present |
| 24 | Journal of Sport and Health Science | 2017 – Present |
| 23 | JoVE | 2017 – Present |
| 22 | Journal of Engineering in Medicine | 2016 – Present |
| 21 | Journal of Biomechanics | 2015 – Present |
| 20 | Journal of Athletic Training | 2015 – Present |
| 19 | Sports Medicine | 2015 – Present |
| 18 | Sports Engineering | 2015 – Present |

17	Journal of Biomechanical Engineering	2014 – Present
16	American Journal of Sports Medicine	2014 – Present
15	Journal of Neurotrauma	2014 – Present
14	Journal of Neurological Sciences	2014 – Present
13	Journal of Sports Engineering and Technology	2014 – Present
12	International Journal of Environmental Research & Public Health	2014 – Present
11	Journal of Structures	2014 – Present
10	Sports Biomechanics	2013 – Present
9	Accident Analysis & Prevention	2013 – Present
8	Experimental Techniques	2013 – Present
7	Traffic Injury Prevention	2013 – Present
6	Journal of Mechanics in Medicine and Biology	2013 – Present
5	Clinical Neurology and Neurosurgery	2013 – Present
4	Public Health	2013 – Present
3	British Journal of Sports Medicine	2012 – Present
2	Journal of Applied Biomechanics	2012 – Present
1	Annals of Biomedical Engineering	2011 – Present

PROFESSIONAL AFFILIATIONS

3	Biomedical Engineering Society (BMES)
2	American Society of Mechanical Engineering (ASME)
1	ASTM International