

# Kim B. Blair, PhD

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## PROFILE

Extensive experience in the development of innovative solutions to challenging technical problems in academic, start-up, small-medium enterprise, and large corporate cultures. Proven skills in strategic planning, innovation management, business development, consulting firm operations, project management, product development, team building, and engineering design and analysis. Over ten years of experience developing and delivering innovative, hands-on educational programs in engineering, product development process, and innovation process. Expert witness in patent litigation proceedings.

## EXPERIENCE

### **RE:BUILD MANUFACTURING**

**Framingham, MA**

*A new American manufacturing conglomerate*

#### **Vice President Business Development**

**2021 – Present**

Building and developing the business development, marketing, sales and communication teams and processes and go to market strategy for the Engineering and Production Solutions Group.

### **STI&E CONSULTING**

**Arlington, MA**

*A Sports Technology Innovation & Engineering consultancy*

#### **Founder**

**2017 – Present**

Provide business and strategic planning, technology scouting, open innovation, technology development and assessment, and development of strategic alliances to the sports industry. Serve as advisory board member for emerging companies developing innovative sports products using advanced technology. Provide expert witness services in patent infringement cases.

### **COOPER PERKINS | Part of PA Consulting**

**Lexington, MA**

*A technology development and product engineering practice*

#### **Partnering Lead**

**2020 – 2021**

Identified and developed partnerships with business leaders, bringing innovative solutions to their challenging business and technical problems. Cooper Perkins as acquired by PA Consulting in late 2020.

### **EXPONENT, INC.**

**Natick, MA**

*A multi-disciplinary engineering and scientific consulting firm*

#### **Senior Manager**

**2017 – 2020**

Provided research and technology development, and intellectual property consulting to industry clients. Lead multi-disciplinary and geographically distributed project teams. Responsible for business development with start-up through Fortune 100 clients.

### **COOPER PERKINS, INC.**

**Lexington, MA**

*A technology development and product engineering practice*

#### **Vice President Business Development & Manager Sports Engineering Practice**

**2010 – 2017**

Member of five-person senior management team. Led business development and client facing operations resulting in 4x company growth in seven years. Managed client relationships in multiple industry sectors. Managed and supported projects in sports engineering including research and development, new product innovation, product development, development of product testing capabilities, technology assessment, and patent litigation support.

### **SPORTS INNOVATION GROUP LLC**

**Arlington, MA**

*A consultancy bringing strategy, innovation, and technology expertise to the sports industry*

#### **Founder**

**2003 – 2009**

Provided business and strategic planning, technology scouting, open innovation, technology development and assessment, and development of strategic alliances to the sports industry. Serve as advisory board member for emerging companies developing innovative sports products using advanced technology. Provide expert witness services in patent infringement cases.

**EXPERIENCE (Continued)****MASSACHUSETTS INSTITUTE OF TECHNOLOGY****Cambridge, MA***Department of Aeronautics and Astronautics***Founding Director, Sports Innovation @ MIT****1999 – 2003**

Founded a unique sports product development research and educational center. Lead multiple one to six-member product development teams in numerous projects focused on sports products, sports product design tools, and sports performance monitoring systems. Develop business and operational plans using market research results. Negotiated intellectual property policies and contractual agreements for program sponsors. Over 100 students have been involved in the program, resulting in over 30 BS theses, two MS theses, and two MEng theses.

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY****Cambridge, MA***Department of Aeronautics and Astronautics***Lecturer, MIT Department of Aeronautics and Astronautics****1999 – 2003**

*Lead Instructor*, Experimental Projects I/II. Course content included project management, experiment design, and technical communications. *Lecturer*, Structural Dynamics (graduate course). *Co-developer and co-instructor*, Advanced Dynamics (undergraduate course).

**MOLDYN, INC.****Cambridge, MA**

*Launched as a division of Photon Research Associates to develop biomechanics, molecular modeling, and bioinformatics software products. Purchased by Structural Bioinformatics, Inc. in 2000.*

**Senior Staff Scientist****1992 – 1999**

Senior Management: Member of 3-person management team responsible for all company operations. Individually responsible for IT infrastructure and support team.

Principal Investigator: Directed four NASA-sponsored projects with total revenue of \$1.4 million

Task Leader: Key contributions in the development of MBO(N)D a molecular dynamics analysis tool.

**NASA, JOHNSON SPACE CENTER****Houston, TX****Aerospace Engineer** (Summer Intern/Graduate Co-op – 15 months total)**1987 – 1990**

Investigated dynamic interaction between payloads and their attachment points in the Space Shuttle. Adapted lunar-landing simulation software for Mars Lander program. Studied Space Shuttle nose-gear landing loads to define the conditions limiting shuttle landings at Kennedy Space Flight Center.

**PURDUE UNIVERSITY****West Lafayette, IN**

**Graduate Student** Schools of Mechanical Engineering and Aeronautics and Astronautics **1985 – 1992**

**Doctoral Research:** Thesis topic: Nonlinear Dynamic Response of Shallow Arches to Harmonic Forcing.

**Master's Research:** Developed analytical model to estimate error in measurement of crack length in fatigue test specimens. Performed fatigue testing on advanced aluminum alloys.

**Teaching Assistant:** Developed the lab section of a junior-level mechanical design course and supervised other lab instructors. Guest lecturer in graduate fatigue course. Managed logistics of graduate distance learning courses. Assisted in undergraduate and graduate courses in structures and dynamics.

**ALPO PETFOODS, INC.****Crete, NE****Associate Project Engineer****1983 – 1985**

Directed high-speed, pet food manufacturing line upgrades from conception through start up. Directly responsible for \$500K, and assisted with \$400K, of capital projects.

## ACADEMIC APPOINTMENTS

### PURDUE UNIVERSITY

West Lafayette, IN

*Ray Ewry Sports Engineering Center***Senior Advisor****2019 – Present**

Advise on research and teaching initiatives. External examiner for PhD student theses.

### LOUGHBOROUGH UNIVERSITY

Leicestershire, UK

*Wolfson School of Mechanical, Electrical and Manufacturing Engineering***Visiting Professor****2008 – Present**

Advise on research and teaching initiatives. External examiner for PhD student theses.

### MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Cambridge, MA

*Department of Aeronautics and Astronautics and Department of Mechanical Engineering***Founding Director, Sports Innovation @ MIT, External Advisor, MIT Sports Lab****2003 – 2017**

Supervisor of student projects. Advisor for the new sports innovation program.

## EDUCATION

### PURDUE UNIVERSITY West Lafayette, IN

**PhD**, Aeronautics and Astronautics

1992

**MS**, Mechanical Engineering

1987

### UNIVERSITY OF NEBRASKA Lincoln, NE

**BS**, Mechanical Engineering

1983

**BA**, Psychology

1981

## PUBLICATIONS, PRESENTATIONS, MEDIA

**Lead Author:** 4 journal articles, 11 conference proceedings, 1 book chapter.**Contributing Author:** 3 journal articles, 7 conference proceedings.**Patents:** US2020/0309809, Support garment testing system. US9642415, Systems and methods for monitoring athletic performance.**Invited Presentations:** Topics include sports technology, innovation process, technology development, at universities, conferences, workshops, in the US and Europe.**Media:** Featured in regional, national, and international print, radio, or television programs.

## PROFESSIONAL ACTIVITIES

**Societies, Journals and Conferences:** International Sports Engineering Association: Secretary, President, Past President, Special Advisor, Co-Director ISEA 2022, American Society of Mechanical Engineers: Member, Journal of Sports Engineering and Technology: Editorial Board Member, Journal of Sports Engineering: Reviewer, Engineering of Sport Conference, and Asia Pacific Congress on Sports Technology: Scientific Committee.

## AWARDS

Fellow of the International Sports Engineering Association, 2022.

University of Nebraska Alumni Achievement Award, 2005.

Eagle Scout, Overland Trails Council, Grand Island, Nebraska, 1973.

### PROFESSIONAL AFFILIATIONS

ISEA, International Sports Engineering Association, Co-Director ISEA 2022 Conference, Director: Special Advisor 2018-2020, Past President 2014 – 2016, President 2010 – 2014, Secretary 2008 – 2010.

Journal of Sports Engineering and Technology, Editorial Board, 2007 – 2010.

Reviewer, Journal of Applied Biomechanics, 2009.

National Science Foundation Design Science Workshop Series, 2008 – 2009.

Golf Digest Technical Advisory Group Member, Technical Review of 2006 Golf Product Offerings, Naples, FL. October 2005.

Golf Digest Technical Advisory Group Member, Technical Review of 2005 Golf Product Offerings, Las Vegas, NV. October 2004 and the PGA Show, Orlando, 2005.

IMCRC International Expert Review Committee Member, Loughborough University, UK, 2004 – 2008.

### JOURNAL ARTICLES AND BOOK CHAPTERS

Crouch, T. N., Burton, D., LaBry, Z. A., and Blair, K. B., 2017, "Riding Against the Wind: A Review of Competition Cycling Aerodynamics," Invited Paper, *Sports Engineering*, Vol. 20, No. 2, pp. 81-110.

Caine, M. P., Blair, K. B., and Vasquez, M., 2012, "Materials and Technology in Sport", Invited Commentary, *Nature Materials*, Vol. 11, pp. 655-658.

Blair, K. B., Chew, G-L, and Cote, M., 2007, "The Effect of Static Leg Position and Cadence on the Drag of a Cyclist," *Human Power eJournal*, Article 14, Issue 4.

Blair, K. B., 2007, "Materials and design for sports apparel," *Materials in Sports Equipment (Volume 2)*, Woodhead Publishing Limited, Cambridge, UK, pp 60-86.

Blair, K. B., Custer, D., Graham, J., Okal, M., 2005, "Analysis of Fatigue Failure in D-Shaped Carabiners," *Sports Engineering*, Vol. 8, No. 2, pp. 107-113.

Chun, H. M., Padilla, C. E., Alper, H. E., Chin, D. N., Watanabe, M. Karlov, V. I., Soosaar, K., Blair, K. B., Becker, O., Caves, L., Nagle, R., and Farmer, B. L., 2000, "MBO(N)D: A Multi-body Method For Long-Time Molecular Dynamics Simulations," *Journal of Computational Chemistry*, Vol. 21, No. 3, pp. 159-184.

Blair, K. B., Krousgrill, C. M., and Farris, T. N., 1997, "Harmonic Balance and Continuation Techniques in Nonlinear Dynamics with an Application to Duffing's Equation," *Journal of Sound and Vibration*, Vol. 202, No. 5, pp. 717-731.

Blair, K. B., Krousgrill, C. M., and Farris, T. N., 1996, "Nonlinear Dynamic Response of Shallow Arches to Harmonic Forcing," *Journal of Sound and Vibration*, Vol. 194, No. 3, pp. 353-367.

### CONFERENCE PAPERS

Berry, M., Las Fargeas, J., and Blair, K. B., 2010, "Wind Tunnel Testing of a Novel Wingsuit Design," *The Engineering of Sport 8*, Proceedings of the 8th Conference of the International Sports Engineering Association, Vienna, Austria, Procedia Engineering, Vol. 2, No. 2, pp 2735-2740.

Blair, K. B., Turner, J. M., and Vasquez, M., 2009, "High Speed Sensor and Testing System for Baseball Chest Protectors," *The Impact of Technology on Sport III*, Proceedings of the 4th Asia Pacific Congress on Sports Technology, Honolulu, HI, USA, eds F. Alam, L. V. Smith, A. Subic, F. K. Fuss and S. Ujihashi, Publishing Solutions Pty Ltd, pp 435-439.

**CONFERENCE PAPERS (Continued)**

Blair, K. B., Williams, G., and Santiago, N., 2009, "Performance Benefits of Handle Flex in Baseball Bats," *The Impact of Technology on Sport III*, Proceedings of the 4th Asia Pacific Congress on Sports Technology, Honolulu, HI, USA, eds F. Alam, L. V. Smith, A. Subic, F. K. Fuss and S. Ujihashi, Publishing Solutions Pty Ltd, pp 251-255.

Holschuh, B. T., Gray, T. L., Blair, K. B., 2009, "Golf Driver/Ball Impact Acoustic Measurement System," *The Impact of Technology on Sport III*, Proceedings of the 4th Asia Pacific Congress on Sports Technology, Honolulu, HI, USA, eds F. Alam, L. V. Smith, A. Subic, F. K. Fuss and S. Ujihashi, Publishing Solutions Pty Ltd, pp 287-291.

Blair, K. B., Vasquez, M., and Groudias, P., 2008, "Testing Procedures for Baseball Chest Protection Equipment," *The Engineering of Sport 7*, Proceedings of the 7th International Conference on the Engineering of Sport, Biarritz, France, Springer-Verlag, Vol. 2, pp. 215-222.

Blair, K. B., and Sidelko, S., 2008, "Aerodynamic Performance of Cycling Time Trial Helmets," *The Engineering of Sport 7*, Proceedings of the 7th International Conference on the Engineering of Sport, Biarritz, France, Springer-Verlag, Paris, France, Vol. 1, pp 371-377.

Blair, K. B., Williams, G., and Vasquez G., 2007, "The Effect of Wood Properties on the Performance of Baseball Bats," in: Fuss F.K., Subic A. and Ujihashi S. (Eds.) *The Impact of Technology on Sport II*. Proceedings of the Asia-Pacific Congress on Sports Technology, Singapore, Taylor & Francis Group, London, pp. 345-349.

Blair, K. B., 2006, "Synopsis of Current Developments: Modeling Equipment," *The Engineering of Sport 6*, Proceedings of the 6th International Conference on the Engineering of Sport, TUM - Munich University of Technology, Germany, Vol. 2, pp. 107-108.

Blair, K. B., Culligan, K. F., and Walfisch, D., 2006, "Analysis of Fulcrum Skate Performance," *The Engineering of Sport 6*, Proceedings of the 6th International Conference on the Engineering of Sport, TUM - Munich University of Technology, Germany, Vol. 3, pp. 301-306.

Blair, K. B., Custer, D., Alziati, S., and Bennett, W., 2004, "The Effect of Load Rate, Placement Angle, and Ice Type on Ice Screw Failure," *The Engineering of Sport 5*, Proceedings of the 5th International Conference on the Engineering of Sport, University of California, Davis, Vol. 2, pp. 283-289.

Hastings, A. Z. Blair, K. B., Culligan, K. F., and Pober, D. M., 2004, "Measuring the effect of transmitted road vibration on cycling performance," *The Engineering of Sport 5*, Proceedings of the 5th International Conference on the Engineering of Sport, University of California, Davis, Vol. 2, pp. 619-625.

Young, L. R., Bush, D. J., Blair, K. B., 2003, "Rear-Releasable Ski Boots for ACL Protection: An Engineering Evaluation," International Society for Skiing Safety, 15th Congress, St. Moritz, Switzerland.

Brodeur, D. R., Young, P. W., and Blair, K. B., 2002, "Problem-Based Learning in Aerospace Engineering Education," Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Montreal, Canada.

Blair, K. B., Custer, D., Graham, J., Okal, M., 2002, "Analysis of Fatigue Failure in D-Shaped Carabiners," 2nd International Conference on Science and Technology in Climbing and Mountaineering, Leeds, United Kingdom.

Chun, H., Karlov, V., Blair, K., Alper, H., Chin, D., Watanabe, M. and Padilla, C., 1997, "A Substructured Dynamics Method for Macromolecules - MBO(N)D. 1. Formulation and Methodology," Abstracts of Papers of the American Chemical Society, Vol. 214, pp. 57.

### CONFERENCE PAPERS (Continued)

Chun, H. M., Padilla, C. E., Blair, K. B., Li, J. H., Haney, D. N., and Alper, H. E., 1994, "A Reduced Variable Approach for Long-Time Dynamics of Large Macromolecular Systems," Air Force Materials Directorate Workshop on Large Scale Simulations in Chemistry/Materials Science.

Blair, K. B., Krousgrill, C. M., and Farris, T. N., 1994, "Dynamic Response of a Shallow Arch to Antisymmetric, Harmonic Loading," Proceedings of the 5th International Conference on Recent Advances in Structural Dynamics, Southampton, England, Vol. I, pp. 326–339.

Blair, K. B., Krousgrill, C. M., and Farris, T. N., 1992, "Nonlinear Dynamic Response of Shallow Arches," Proceedings of the 33rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Dallas, TX, pp. 2376–2384.

Blair, K. B., Krousgrill, C. M., and Farris, T. N., 1992, "Harmonic Balance and Continuation Techniques in Nonlinear Dynamics with an Application to Duffing's Equation," ASME Applied Mechanics, Materials and Aerospace Summer Meeting, Scottsdale, AZ, 1992.

### CONFERENCE COMMITTEES

Session Chair, 11th International Conference on Engineering of Sport, Delft University of Technology, Delft, NL, July 2016.

Session Chair, 10th International Conference on Engineering of Sport, Sheffield Hallam University, Sheffield, UK, July 2014.

Scientific Committee Member, 10th International Conference on Engineering of Sport, Sheffield Hallam University, Sheffield, UK, July 2014.

Session Chair, 9th International Conference on Engineering of Sport, University of Massachusetts - Lowell, Lowell, MA, July 2012.

Scientific Committee Member, 9th International Conference on Engineering of Sport, University of Massachusetts - Lowell, Lowell, MA, July 2012.

Session Chair, 8th International Conference on Engineering of Sport, Fachhochschule Technikum Wein, Vienna, Austria, July 2010.

Scientific Committee Member, 8th International Conference on Engineering of Sport, Fachhochschule Technikum Wein, Vienna Austria, July 2010.

Scientific Committee Member, 4th Asia Pacific Congress on Sports Technology, Honolulu, HI, September 2009.

Session Chair, 7th International Conference on Engineering of Sport, Ecole Supérieure des Technologies Industrielles Avancées, Biarritz, France, June 2008.

Scientific Committee Member, 7th International Conference on Engineering of Sport, Ecole Supérieure des Technologies Industrielles Avancées, Biarritz, France, July 2008.

Member, Board of Advisors, Sporting Goods Manufacturers Association Sport + Technology Summit, San Diego, CA, October 2007.

Conference Chair, Better Golf Through Technology Conference, Massachusetts Institute of Technology, March 2007.

Session Chair, 6th International Conference on Engineering of Sport, Technischen Universität München, Munich, Germany, July 2006.

Scientific Committee Member, 6th International Conference on Engineering of Sport, Technischen Universität München, Munich, Germany, July 2006.

### CONFERENCE COMMITTEES (Continued)

Conference Chair, Better Golf Through Technology Conference, Massachusetts Institute of Technology, February 2006.

Session Chair, "What Industry Wants – A Panel Discussion," 5th International Conference on Engineering of Sport, University of California – Davis, September 2005.

Scientific Committee Member, 5th International Conference on Engineering of Sport, University of California – Davis, September 2005.

### INVITED PRESENTATIONS

"Smart Devices in Sports Products", Guest lecture for ME 597 – Sports Technology and Entrepreneurship, School of Materials Engineering, Purdue University, February 2021.

"The Big Picture – Industry", Keynote presentation, The Spot 2019 by ThinkSport, Lausanne, Switzerland, May 2019.

"The Innovation Mindset", Panel moderator, The Spot 2019 by ThinkSport, Lausanne, Switzerland, May 2019.

"Smart Devices in Sports Products", Guest lecture for ME 597 – Sports Technology and Entrepreneurship, School of Materials Engineering, Purdue University, February 2019.

"Wearable Technology – A Brief History, Current Challenges, and Future Directions", MassDLA 2018 Annual Meeting and Spring Seminar, Boston, MA, June 2018.

"Smart Devices in Sports", Harrington STEM Lecture Series, State University of New York – New Paltz, November 2017.

"Smart Devices in Sports Products", Guest lecture for EM 153 – Management of Innovation, Gordon Institute, Tufts University, February 2017.

"Smart Devices in Sports Products", Guest lecture for ME 597 – Sports Technology and Entrepreneurship, School of Materials Engineering, Purdue University, February 2017.

"Hardware Development for Smart Products in Sports", Invited seminar, Sports Technology Institute, Wolfson School of Mechanical, Electrical and Manufacturing Engineering, Loughborough University, November 2016.

"Hardware Development for Smart Products in Sports", Invited entrepreneurship seminar, Loughborough University London, November 2016.

"Pressure Sensitive Adhesives - An Application Engineer's Point of View", Keynote presentation, 3M 2015 PSA Symposium, 3M Headquarters, St. Paul, MN, May 2015.

"Hardware Innovation and Product Development Process", 3M Automotive Applications Group Lunch and Learn, 3M Headquarters, St. Paul, MN, May 2015.

Panelist – "Innovations Fueling the Sports and Entertainment Industries", Licensing Executives Silicon Valley Chapter Fifteenth Annual Conference, Palo Alto, CA, April 2015.

"Wearable Technology – The Hardware Challenge", Evolve – The CSE Innovation Summit, Atlanta, GA, January 2015.

"Multi-Disciplinary Engineering for the Development of Advanced Applications in Sport Textiles", The AISTS & CSEM Conference on Smart Textile Opportunities for Sport, Rolex Centre, École Polytechnique Fédérale de Lausanne, Switzerland, November 2013.

"The Disciplines of Technology Development and Product Design", Sports Tech and Innovation Summit, The Emirates Stadium, London, UK, November 2013.

**INVITED PRESENTATIONS (Continued)**

“The Disciplines of Technology Development and Product Design”, Executive MBA at the School of Management in Fribourg Workshop, Swissnex, Cambridge, MA, October 2013.

“The Disciplines of Technology Development and Product Design”, Sports Analytics Innovation Meet Up, Boston, MA, July 2013.

“The Disciplines of Technology Development and Product Design”, Centre for Sport and Exercise Sciences, Sheffield Hallam University, Sheffield, UK, September 2012.

Panelist – “How Can Sport Drive Engineering Innovation?”, Royal Academy of Engineering, London, UK, September, 2012.

“The Disciplines of Technology Development and Product Design”, Swissnex Venture Leaders Conference, Cambridge, MA, October 2011.

“The Disciplines of Technology Development and Product Design”, Department of Mechanical and Aerospace Engineering, Rutgers University, Piscataway, NJ, October 2011.

“The Disciplines of Technology Development and Product Design”, Department of Industrial and Systems Engineering at Rensselaer Polytechnic Institute, Rochester, NY, October 2011.

“The Disciplines of Technology Development and Product Design”, Department of Mechanical & Materials Engineering Pierson Lecture Series, University of Nebraska, Lincoln, NE, September 2011.

“The Disciplines of Technology Development and Product Design”, Nebraska Society of Professional Engineers, Eagle, NE, September 2011.

Panelist – “Golf Analytics”, MIT Sloan Sports Analytics Conference, Cambridge, MA, March 2011.

“The Disciplines of Technology Development and Product Design”, Applied Ocean Physics & Engineering Seminar Series, Woods Hole Oceanographic Institute, Woods Hole, MA, February 2011.

“Innovation Workshop,” University of Jyväskylä, Jyväskylä, Finland, November 2010.

Panelist – “Performance Enhancement: Will Future Athletes be Formula One or NASCAR?”, MIT Sloan Sports Analytics Conference, Cambridge, MA, March 2010.

“Aerodynamics of Sports Balls,” adidas International, Pre-Release of 2010 World Cup Soccer Ball, Scheinfeld, Germany, November 2009.

“Innovation in Sports Technology – Developing Marketable Products,” University of Bridgeport, November, 2009.

“Applications of High-Speed Imaging in Sports Product Design,” Massachusetts Institute of Technology Professional Education Short Program in High-Speed Imaging for Motion Analysis: Systems and Techniques, June 2009.

“Engineering Sporting Excellence,” Sports Engineering and Technology, Institute of Mechanical Engineers, London, March 2009.

“Innovation in Sports Technology – Developing Marketable Products,” Purdue University Mechanical Engineering Design Seminar, April, 2009.

Panel Moderator – Sport 2.0: The Evolution of Technology and Sports, MIT Sloan Sports Analytics Conference, Cambridge, MA, March 2009.

“Innovation in Sports Technology – Developing Marketable Products,” New England American College of Sports Medicine Conference, November, 2008.

“Location Switzerland – Sports Business Tour,” Switzerland, April 2008.

Panel Moderator – Technology, MIT Sloan Sports Analytics Conference, Cambridge, MA, February 2008.



**INVITED PRESENTATIONS (Continued)**

"Innovative Technologies in Sport," Netherlands Office for Science & Technology, Netherlands Ministry of Economic Affairs, The Hague, The Netherlands, November 2007.

"Building Collaborative Relationships Between Industry, Government and Academia – An International Discussion Panel," SGMA's Sports and Technology Convergence, La Jolla, CA, October 2007.

"Creating Sports Performance Innovations," Jyväskylä Regional Development Company, Jyväskylä, Finland, July 2007.

"Creating Sports Performance Innovations," Oulu Wellness Institute, Oulu, Finland, July 2007.

Panel Moderator – "Sponsorship", MIT Sloan Sports Analytics Conference, Cambridge, MA, February 2007.

"Implementing Sports Performance Innovations in Mass Sports Products," SGMA's Sports and Technology Convergence, La Jolla, CA, October 2006.

"Sports Apparel Aerodynamics," Department of Materials and Textiles," University of Massachusetts Dartmouth, May 2006.

"Cycling Aerodynamics," Exercise and Health Science Department, University of Massachusetts Boston, April 2006.

"Teaching and Research at the MIT Center for Sports Innovation," Sports and Rehabilitation Engineering Center, École Polytechnique Fédérale de Lausanne, Switzerland, November 2005.

"Teaching and Research at the MIT Center for Sports Innovation," NeuroMuscular Research Center Seminar Series, Boston University, October 2005.

"Innovation and Product Development in Sports," Mechanical Engineering Colloquium Series, University of Nebraska, October 2005.

"Predicting the Success of Innovation," The 2005 Growth and Innovation Conference, New York, NY, May 2005.

"New Technology and Sports Equipment," International Business Intelligence Series, Orlando, FL, January 2005.

"New Technologies to Monitor and Enhance Athletic Performance," CIMIT – Center for the Integration of Medicine and Innovative Technology Forum, Boston, MA, January 2005.

"Technology and Sports," International Congress on Technological and Social Innovation in Sport, San Sebastian, Spain, December 2004.

"Applications of Smart Textiles in the Sports Industry," ESPRC Network: Smart Textiles for Intelligent Consumer Products, London, United Kingdom, June 2004.

"Driving Innovation in Product Development," IDEAS 2004, Boston, MA, June 2004.

"Hands-on Experience in Teaching Innovation and Product Development", Center for Innovation and Product Development Seminar Series, Sloan School of Management, Massachusetts Institute of Technology, Cambridge, MA, April 2004.

"Sports Product Innovation," Lemelson Center's Symposium, Inventing Ourselves, Lemelson Center for the Study of Invention and Innovation, Smithsonian National Museum of American History, Washington, DC, November 2003.

"Sports Product Development in Engineering Education," Queen Mary University of London, United Kingdom, November 2003.

"Sports Product Development in Engineering Education," Loughborough University, United Kingdom, November 2003.

### **INVITED PRESENTATIONS (Continued)**

“Advanced Development of Sports Equipment – Prototype Production,” United States Olympic Committee Coach’s Conference, Colorado Springs, CO, April 2003.

### **EDUCATIONAL OUTREACH**

“Teaching Product Development in a Laboratory Context,” The 2002 MIT Engineering/Manufacturing Conference: Innovations in Product Development, Cambridge, MA, October 2002.

WGBH “Fetch” Scientific Advisory Board, 2007 – 2009.

Lecturer, MIT Science of Baseball Program, Cambridge, MA, July 2008.

Sports Product Development Segment, Teacher’s Domain, Multimedia Resources for the Classroom and Professional Development, <http://www.teachersdomain.org>, Produced by WGBH, July 2006.

Course Faculty, International Sports Engineering Association Summer School, Lectures in aerodynamics, materials, and a seminar in product development process, Prato, Italy, June 2005.

Associate Director Get SSET!: Sport Science, Engineering and Technology Summer Camp for Young Women, MIT, Cambridge, MA, August 2005.

Course Faculty, Get SSET!: Sport Science, Engineering and Technology Summer Camp for Young Women, MIT, “Wind Tunnel Testing of Sports Equipment”, and “Understanding User Needs in Sports Equipment Design,” Cambridge, MA, August 2005.

Boston Museum of Science Lowell Institute Lecture Series, “Material Science in Sports: High Performance Equipment Design,” Boston, MA, December 2004.

Course faculty, Get SSET!: Sport Science, Engineering and Technology Summer Camp for Young Women, MIT, “Wind Tunnel Testing of Sports Equipment”, and “Understanding User Needs in Sports Equipment Design,” Cambridge, MA, August 2004.

Boston Museum of Science Lowell First Friday Lecture Series, “Aerodynamics and Sports,” Boston, MA, February 2004.

Get SSET!: Sport Science, Engineering and Technology Summer Camp for Young Women, “Wind Tunnel Testing of Sports Equipment,” MIT, Cambridge, MA, August 2003.

Aerodynamics and wind tunnel testing advisor, POVme, an educational science of sports television program aimed at preteens and teens, primarily targeting young women, minorities, and the disabled who have a strong interest in sports, May 2003.

Member, Board of Advisors, Harvard-Smithsonian SportSmarts, a national education campaign of the designed to increase the understanding and appreciation of science through sports, 2000 – 2004.

### **AWARDS FOR SUPERVISED ACADEMIC PROJECTS**

Aeronautics and Astronautics Department, MIT: Leaders for Manufacturing Award for directly dealing with issues that are related to the interface of engineering and manufacturing, Santiago, N., and Williams, G., “Performance Benefits of Handle Flex in Baseball Bats,” June 2006.

ispo - Technical University of Munich: Academic Challenge Award, Munich, Germany. 1st Place Popular and Leisure Sports Category, Okal, M., “Carabiner Damage Detection Device,” February 2004.

ispo - Technical University of Munich: Academic Challenge Award, Munich, Germany. 2nd Place Popular and Leisure Sports Category, Wang, C-A., “Triathlon Shoe Design”, February 2004.

### **AWARDS FOR SUPERVISED ACADEMIC PROJECTS (Continued)**

Aeronautics and Astronautics Department, MIT: United Technologies Corporation Award for outstanding achievement in the design, construction, execution, and reporting of an undergraduate experimental project, Alziati, S. A., and Bennett, W. L. M., "Simulating and Testing Ice Screw Performance in the Laboratory," May 2003.

2nd International Conference on Science and Technology in Climbing and Mountaineering, Leeds, United Kingdom: Best Student Presentation in Technological Fields, Okal, M., "Analysis of Fatigue Failure in D-Shaped Carabiners", April 2002.

Aeronautics and Astronautics Department, MIT: Admiral Luis de Florez Award for original thinking or ingenuity, Okal, M., and Graham, J., "Fatigue Failure of Climbing Carabiners," May 2002.

### **SUPERVISED THESES**

Li, Harriet and Obropta, "Bicycle Fork Aerodynamics," SB Aeronautics and Astronautics, Massachusetts Institute of Technology, June 2012.

Hyatt, D., "Proposed Testing Method for Foam Padding," SB Mechanical Engineering, Massachusetts Institute of Technology, June 2011.

Ryne, B, and Kays, C., "Laptop Computer Shock and Vibration Characterization in Commuter Bike Packs," SB Aeronautics and Astronautics, Massachusetts Institute of Technology, December 2010.

Racz, R., "Development of an Improved Wind Tunnel Test Platform for Bicycles," SB Mechanical Engineering, Massachusetts Institute of Technology, June 2010.

Berry, M., Fargeas, J. L., "Lift to Drag Increase of Wingsuits," SB Aeronautics and Astronautics, Massachusetts Institute of Technology, June 2010.

Vasquez, M., "Economic and Technological Advantages of Using High Speed Sintering as a Rapid Manufacturing Alternative in Footwear Applications," M Eng, Materials Science and Engineering, Massachusetts Institute of Technology, June 2009.

Pier, T., "Development of a Camber Measurement System for Skis and Snowboards," SB Mechanical Engineering, Massachusetts Institute of Technology, June 2008.

Desrochers, C., "Product Development of a Resistive Athletic Suit," SB Mechanical Engineering, Massachusetts Institute of Technology, January 2008.

Cote, M., "Product Design and Development of an Aerodynamic Hydration Systems for Bicycling and Triathlon," SB Mechanical Engineering, Massachusetts Institute of Technology, June 2007.

LaCrosse, B. A., "Measurement of Baseball Glove and Hand Dynamics," SB Mechanical Engineering, Massachusetts Institute of Technology, June 2007.

Renjifo, J. F., "Developing the Next "Wow" Fitness Product," SB Mechanical Engineering, Massachusetts Institute of Technology, June 2007.

Sidelko, S., "Aerodynamic Performance of Time Trial Helmets," SB Mechanical Engineering, Massachusetts Institute of Technology, June 2007.

Liburd, S., and Naranjo, J. L., "Thermal Performance of Under Armour Sports Apparel," SB Aeronautics and Astronautics, Massachusetts Institute of Technology, June 2007.

Gray, T., and Holschuh, B., "Golf Driver-Ball Impact Acoustic Measurement System," SB Aeronautics and Astronautics, Massachusetts Institute of Technology, June 2006.

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