

# Jacob Jerome Setterbo

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## EDUCATION

**Ph.D., Biomedical Engineering**, University of California, Davis, March 2011

Dissertation: Comparison of equine racetrack dynamic surface properties and development of a surface-testing system. Advisors: Dr. Susan Stover & Dr. Mont Hubbard

**Bachelor of Science, Civil Engineering**, The University of Texas at Austin, May 2005

## RESEARCH EXPERIENCE

**Doctoral Research**, Biomedical Engineering, UC Davis, 04/06-03/11

Analyzed force, acceleration and kinematic data from Keeneland Race Course in Kentucky with MATLAB. Statistically analyzed the effect of surface on measured values with SAS. Designed and fabricated a mechanical track-testing device and protocol for evaluating race surfaces in the laboratory and in the field. Created data acquisition program with LabVIEW to collect data; created custom graphical-user-interface program with MATLAB to analyze data. Statistically analyzed the effect of surface, impact velocity, impact angle, and maintenance conditions on measured dynamic surface properties with SAS. Supervised and mentored three research assistants.

**Research Assistant**, School of Construction, Arizona State University, 06/04-08/04

Conducted site visits, interviews and literature review to investigate construction worker safety. Presented recommendations for interventions and future research to the Work Safety Modeling Laboratory.

## TEACHING EXPERIENCE

**Guest Lecturer**, Biomechanics, Cal Poly at San Luis Obispo, 06/01/10

Lectured on biomechanical analysis methods and presented example results to upper division undergraduate biomechanics class. Dr. Scott Hazelwood, Biomedical Engineering.

**Teaching Assistant**, Capstone Biomedical Engineering Design, UC Davis, 01/07-06/07

Graded most assignments and checked project notebooks for senior design class. Performed administrative duties using online technologies such as SmartSite. Helped students prepare for poster and oral presentations. Advised students during office hours.

**Teaching Assistant**, Properties of Materials Laboratory, UC Davis, 09/06-06/07

For four laboratory experiments each quarter, presented relevant information in discussion section one week, and coordinated and supervised the students in the laboratory section the following week. Created quizzes and graded lab reports in order to evaluate student progress. Advised students during office hours. Also graded midterm and final examinations.

## PUBLICATIONS

**Setterbo JJ**, Garcia TC, Campbell IP, Reese JL, Wade JM, Kim SY, Hubbard M, Stover SM. Hoof accelerations and ground reaction forces of Thoroughbred racehorses measured on dirt, synthetic, and turf track surfaces. *American Journal of Veterinary Research* 2009;70(10):1220-1229.

**Setterbo JJ**, Garcia TC, Campbell IP, Kim SY, Hubbard M, Stover SM. Forelimb kinematics of galloping Thoroughbred racehorses measured on dirt, synthetic, and turf track surfaces. In: Estivalet M, Brisson P, eds. *The Engineering of Sport 7*. Biarritz, France: Springer, 2008;437-446.

### Manuscripts under review:

**Setterbo JJ**, Yamaguchi A, Hubbard M, Upadhyaya SK, Stover SM. Effects of equine racetrack surface type, depth, boundary area, and harrowing on dynamic surface properties measured using a track-testing device in a laboratory setting. Submitted to *Sports Engineering*, 2010.

### Manuscripts in preparation:

**Setterbo JJ**, Fyhrie PB, Hubbard M, Upadhyaya SK, Stover SM. Dynamic properties of dirt and synthetic equine racetrack surfaces measured by a track-testing device. To be submitted to *Equine Veterinary Journal*, 2011.

**Setterbo JJ**, Chau A, Hubbard M, Upadhyaya SK, Stover SM. Validation of a laboratory method for evaluation of dynamic properties of equine racetrack surfaces. To be submitted to *American Journal of Veterinary Research*, 2011.

## CONFERENCE PRESENTATIONS/ABSTRACTS

**Setterbo JJ**, Yamaguchi A, Hubbard M, Upadhyaya SK, Stover SM. Effects of equine racetrack surface type, depth, and confining area on force and displacement measurements using a track-testing device, *34<sup>th</sup> Annual Meeting of the American Society of Biomechanics*, Aug 18-21, 2010, Providence, RI, & *2nd South Central American Society of Biomechanics Conference*, Feb 11-13, 2010, Denton, TX.

**Setterbo JJ**, Fyhrie PB, Hubbard M, Upadhyaya SK, Stover SM. Comparison of the dynamic properties of dirt and synthetic equine track surfaces using a track-testing device, *11th Annual UC Systemwide Bioengineering Symposium*, Jun 17-19, 2010, Davis, CA.

Yamaguchi A, **Setterbo JJ**, Hubbard M, Upadhyaya SK, Stover SM. Effects of surface depth and compaction on impact deceleration of dirt and synthetic surface materials for equine racetracks, *2nd South Central American Society of Biomechanics Conference*, Feb 11-13, 2010, Denton, TX.

**Setterbo JJ**, Garcia TC, Campbell IP, Reese JL, Wade JM, Kim SY, Hubbard M, Stover SM. Hoof accelerations and ground reaction forces of Thoroughbred racehorses measured on dirt, synthetic, and turf track surfaces, *American Association of Equine Practitioners*

*Annual Convention*, Dec 7-10, 2008, San Diego, CA, & *6th International Conference on Equine Locomotion*, Jun 16-19, 2008, Cabourg, France.

**Setterbo JJ**, Garcia TC, Campbell IP, Kim SY, Hubbard M, Stover SM. Forelimb kinematics of galloping Thoroughbred racehorses measured on dirt, synthetic, and turf track surfaces, *6th International Conference on Equine Locomotion*, Jun 16-19, 2008, Cabourg, France, & *7th Conference of the International Sports Engineering Association*, Jun 2-6, 2008, Biarritz, France.

### **PROFESSIONAL DEVELOPMENT**

- Professors for the Future program, UC Davis Office of Graduate Studies, 09/09-06/10
  - Year-long competitive fellowship program designed to prepare outstanding UC Davis doctoral students for careers in academia
- Teaching consultation, UC Davis Teaching Resources Center, 01/10
  - Teaching demonstration was video-taped and critiqued by a trained consultant
- Seminar on College Teaching, UC Davis Teaching Resources Center, 09/09-12/09
  - Seminar on the principles and methods of effective college teaching
- Teaching Assistant Orientation, UC Davis Teaching Resources Center, 08/06
  - Training program designed for new teaching assistants

### **ACADEMIC SERVICE**

- Volunteer, 11th Annual UC Systemwide Bioengineering Symposium, 2010
- Professors for the Future Project, UC Davis Office of Graduate Studies, 2009-2010
  - Created website to help UC Davis graduate students achieve broader impacts with their research
  - Coordinated workshop: “Making an Impact: Outreach and the Broader Impacts Section for NSF”
  - Coordinated “Science & Engineering Exposition” at local elementary school for graduate students to present their research in an exciting way to kids
- Website Development, *NOTES ON: Teaching to a Diverse Student Body*, Fall 2009
- President, UC Davis Biomedical Engineering Student Association, 2006-2008
  - Coordinated graduate student activities and helped organize graduate group events, such as Fall Welcome BBQ and Recruitment Weekend
- Student representative, UC Davis Biomedical Engineering Graduate Group Executive Council, 2006-2008

### **K-12 OUTREACH**

- Producer, research rap video, 2010: Developed YouTube music video, “THIS IS WHY WE STAY IN SCHOOL,” to encourage kids to pursue engineering and study hard in science and math [ <http://www.youtube.com/watch?v=CERWnfh3XKE> ]
- Volunteer, Anna Kyle Elementary, Fairfield, CA, 2007-2010: Visited 5<sup>th</sup> and 6<sup>th</sup> grade classes to encourage interest in math and science; activities included newspaper engineering competition, fantasy football math, presenting racetrack surface research, and general math and science tutoring
- Volunteer, National Engineers Week at UC Davis, 2009, 2010

- Volunteer, Student Engineers Educating Kids, Austin, TX, 2004: Participated in weekly after-school program that focuses on students currently underrepresented within engineering and helps them explore engineering as an attainable career path

### **COMMUNITY SERVICE**

- Volunteer, Davis Public Herb Garden renovation, 2008
- Volunteer, Putah Creek Clean-up, 2007
- Volunteer, North Davis Elementary, Davis, CA, 2006-2007: Helped run weekly specialized Physical Education program that focuses on non-stop exercise for all students
- Volunteer, Davis Community Meals, 2006

### **PROFESSIONAL MEMBERSHIPS**

- American Society of Biomechanics (ASB)
- American Society of Mechanical Engineers (ASME)
- Biomedical Engineering Society (BMES)
- International Society of Biomechanics (ISB)
- International Sports Engineering Association (ISEA)
- ASTM International

### **HONORS AND AWARDS**

- Dissertation Year Fellowship, 2009/2010, \$32,508
- Professors for the Future Fellow, 2009/2010, \$3,000
- Office of Graduate Studies Graduate Student Travel Award, 2010, \$500
- James M. Wilson Award for the Outstanding Equine Research Publication, 2009, \$750
- Biomedical Engineering Student Association Student Leadership Award, 2009
- Graduate Student Association Travel Award, 2008, \$250
- John A. Focht Academic Excellence Award, 2005
- Terry Foundation Scholarship, 2001 to 2005

### **RESEARCH GRANTS**

- Co-authored proposal to Grayson-Jockey Club Research Foundation. Funded \$49,786 for 2009/2010
- Co-authored proposal to Center for Equine Health. Funded \$34,577 for 2008/2009
- Co-authored proposal to Center for Equine Health. Funded \$32,660 for 2007/2008