

Rebecca Avrin Zifchock

Home Address:
12 Myers Road
Newark, DE 19713
(302) 737-4511

beckyaz@udel.edu

Professional Address:
326 McKinly Lab
Newark, DE 19716
(302) 831-4646

EDUCATION

- 2007 (expected) **The University of Delaware**, Newark, DE
Doctor of Philosophy in Biomechanics and Movement Science
- 2002 **The Pennsylvania State University**, University Park, PA
Master of Science in Biomechanics
- 2000 **Cornell University**, Ithaca, NY
Bachelor of Science in Biological Engineering,
Minor in Mechanical Engineering

RESEARCH EXPERIENCE

- Aug. 2003 – present **Research Assistant**
Motion Analysis Laboratory, The University of Delaware
Advisor: Irene Davis, Ph.D.
Examining the causes and effects of structural and mechanical asymmetries in the lower extremities of the human body. Research is focused upon chronic injuries sustained by runners.
- Jan. 2001 – Dec. 2002 **Thesis Research**
Center for Locomotion Studies, The Pennsylvania State University
Advisor: Stephen J. Piazza, Ph.D.
Based upon cadaver modeling, developed a computer simulation model for performing a virtual calcaneal osteotomy. The findings of the research are applicable in clinical decision-making and biomechanical modeling.
- Summer 1998 **Independent Research**
Human Performance Laboratory, Cornell University
Advisor: Andy Ruina, Ph.D.
Built a physical lower extremity model that simulates how human movement is altered when the joints, specifically the ankle, knee, and hip, are disabled for any reason

PUBLICATIONS

Peer-Reviewed Conference Proceedings

1. **Zifchock, RA**, Davis, IM, & Hamill, J: Kinetic Asymmetry in Left and Right Dominant Female Runners: Implications for Injury. *XXth Congress of the International Society of Biomechanics, 2005*
2. **Zifchock, RA**, Davis, IM: Kinetic Asymmetry in Female Runners with and without Retrospective Tibial Stress Fractures. *52nd Annual Meeting of the American College of Sports Medicine, 2005*
3. **Zifchock, RA**, Davis, IM, & Hillstrom, H: Age and Gender Differences in Arch Height and Arch Stiffness. *28th Annual Meeting of the American Society of Biomechanics, 2004*
4. **Zifchock, RA**, Butler, RJ, & Davis, IM: Measured Differences in Foot Arch Height as a Function of Gender. *51st Annual Meeting of the American College of Sports Medicine, 2004*
5. Piazza, SJ, Moran, MF, & **Avrin, RJ**: Unexpected Muscle Actions at the Subtalar Joint: Implications for the Study of Multijoint Movement. *25th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2003*

6. **Avrin, RJ**, & Piazza, SJ: Investigation of the Validity of Modeling the Achilles Tendon as Having One Fixed Insertion Site. *Eighth Annual Meeting of the Gait and Clinical Movement Analysis Society*, 2003
7. Moran, MF, **Avrin, RJ**, & Piazza, SJ: Comparison of Joint Axis Determination Methods: Application to the Subtalar Joint. *Seventh Annual Meeting of the Gait and Clinical Movement Analysis Society*, 2002
8. **Avrin, RJ**, Moran, MF, & Piazza, SJ: Effect of Subtalar Joint Axis Position on Inversion-Eversion Muscle Moment Arms. *Seventh Annual Meeting of the Gait and Clinical Movement Analysis Society*, 2002

Peer-Reviewed Journal Articles

1. **Zifchock, RA** & Piazza, SJ. 2004. Investigation of the Validity of Modeling the Achilles Tendon as having a Single Insertion Site. *Clinical Biomechanics* 19(3), 303-307
2. **Zifchock, RA**, Davis, I, Hillstrom, H, & Song, J. The Effect of Gender, Age, and Lateral Dominance on Arch Height and Arch Stiffness. *Foot and Ankle International (in press)*

RELEVANT WORK EXPERIENCE

Aug. 2002 – June 2003

Research Associate

Neuromuscular Biomechanics Laboratory, Cornell University

Updated and reconfigured a computer system-mechanical interface used to describe the forces exerted by the thumb while intact, with pathologies, and post-surgical intervention.

Sept. 1999 – Aug. 2000

Fitness Center Monitor and Equipment Technician

Aug. 2002 – June 2003

Cornell Fitness Center, Ithaca, NY

Encouraged, trained, and served as a health resource for members of the Cornell Fitness Center

Aug. 1998 – Jan. 1999

Engineering Co-op

June 1999 – Aug. 1999

Nestlé Research & Development, New Milford, CT

Worked independently and with peers on engineering problems involving the food service industry. Focused on testing and evaluating the mechanical performance of beverage dispensing machines. Utilized machining and computer software skills as well as knowledge in heat and mass transfer, material properties, and experimentation techniques. Presented the findings orally and in scientific reports

TEACHING EXPERIENCE

Fall 2005

Guest Lecturer

Physical Therapy Department, Health & Exercise Science Department, The University of Delaware

Prepared and taught lectures and laboratory exercises to undergraduate exercise students and doctoral physical therapy students

Jan. 2001 – July 2002

Undergraduate Supervisor

Center for Locomotion Studies, The Pennsylvania State University

Organized and supervised undergraduate research projects in Biomechanics

Jan. 2001 – Dec. 2001

Teaching Assistant

Kinesiology Department, The Pennsylvania State University

Taught laboratory, research, and conceptual skills to undergraduate kinesiology students in *Biomechanics*

Summer 1999 **Program Assistant**
Cornell University Research in Engineering, Cornell University
Facilitated engineering workshops, aided in a design project, and served as an instructor as well as a peer advisor to encourage high school girls to enter the field of engineering

PROFESSIONAL SERVICE

July 2004 – present **Student Representative**
American Society of Biomechanics Education Committee

September 2005 – present **Student Representative**
Biomechanics and Movement Science Faculty
University of Delaware

Fall 1999 – Fall 2000 **Secretary**
Mu Sigma Tau: Engineering Co-op Honor Society
Cornell University

HONORS & AWARDS

April 2002 Young Investigator Award, Gait and Clinical Movement Analysis Society
April 2002 Student Conference Award, Gait and Clinical Movement Analysis Society
1996-2000 Robert J. Byrd Scholarship
1996 Steven Pike Memorial Athletic Scholarship

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Society of Biomechanics, current Student Representative- Education Committee
American College of Sports Medicine
Gait and Clinical Movement Analysis Society
International Society of Biomechanics
Mu Sigma Tau: Engineering Co-op Honor Society

VOLUNTEER WORK EXPERIENCE

Fall 2005 **Assistant Coach**
Girls On The Run
New Castle County, DE
Assist the Head Coach to provide an environment that promotes self-confidence, physical fitness, motivation, and achievement for girls aged 8-11

Aug. 2000 – Nov. 2000 **Resource Assistant**
Student Conservation Association/Americorps,
Charlestown, NH/Washington, DC
Worked on a 50 mile trail system in the Squam Lakes Region of New Hampshire to maintain and protect the trails from erosion and usage-incurred damage

Spring 1997 **Volunteer Work and Observation**
Cornell Sports Medicine, Ithaca, NY
Worked with physical therapists in the athletic department helping and observing physical therapy techniques