

Jason T. Vance, M.S.

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Research and Career Interests

Investigate the biomechanics and physiology which underlie locomotion in terrestrial and aerial species; elucidate the strategies employed to accommodate adverse locomotor conditions, including added mass (load carriage), variable gas densities and barometric pressure, variable temperature, and imposed locomotor constraints; model biological systems using the mechanistic principles of physics and engineering to describe and understand locomotor phenomena.

Education

2003 – Present

Ph.D (in progress), University of Nevada, Las Vegas: Biological Sciences

- Comparative Physiology and Biomechanics
- Research: Empirical Analysis and Computational Fluid Dynamic Modeling of the Biomechanics and Aerodynamics of Insect Flight In Variable-Density Gasses and Temperatures

2000 – 2003

M.S. (2003), University of Nevada, Las Vegas (UNLV): Kinesiology

- Thesis (Spring 2003): Impact Shock Attenuation and Energy Absorbed at the Ankle and Knee Joints During Heel-Strike, Forefoot-Strike, and Spring-Boot Running
- Specializations: Biomechanics and Human Motor Behavior

1996 – 2000

B.S. (2000) University of Oregon, Eugene: Exercise and Movement Science

- Independent Study: Effects of Aerodynamic Cycling Positions on Oxygen Consumption and Lower Extremity Muscle Activation Patterns; 1998 - 2000
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Professional Experience

2003 – Present

Graduate Assistant, University of Nevada, Las Vegas: Biological Sciences

Part-Time Instructor, BIO 223 Lecturer, Anatomy and Physiology

2002 – 2003

Part-Time Instructor, University of Nevada, Las Vegas: Biological Sciences

2000 – 2002

Graduate Assistant, University of Nevada, Las Vegas: Kinesiology

Abstracts and Presentations

- Vance, J.**, Altshuler, D., Dickinson, M., & Roberts, S. (2005). Insect flapping aerofoil propulsion in variable density atmospheres: A model for the design and function of micro aerial vehicles. The Annual Nevada NASA Joint Conference, Carson City, Nevada.
- Vance, J.**, Altshuler, D., Dickinson, M., & Roberts, S. (2005). High-speed kinematic analysis of honeybees (*Apis mellifera*) hovering in variable density atmospheres: Insights into aerodynamic reserve capacity and performance limitations. Society of Integrative and Comparative Biology, Annual Meeting, San Diego, California.
- Vance, J.**, Elekonich, M. & Roberts, S. (2004). Flight of the Honey Bee: An Aerodynamic Analysis of Hovering in Variable-Density Atmospheres. Annual meeting of the North American Section of the International Union for the Study of Social Insects. Arizona State University.
- Vance, J.** and Mercer, J.A. (2002). Stride-length, leg and head acceleration during spring boot running. Proceedings from the American College of Sports and Medicine 49th Annual Meeting: *Medicine and Science in Sports and Exercise*, 34(5), s28
- Vance, J.** and Mercer, J.A. (2002). Stride-length, leg and head acceleration during spring boot running. Graduate Student Research Forum; Graduate Student Association; University of Nevada, Las Vegas.
- Vance, J.** and Mercer, J.A. (2001). Impact forces during running in a novel spring boot. Proceedings from the American Society of Biomechanics, 25th Annual Conference. August 2001, San Diego, CA.
- Mercer, J.A., **Vance, J.**, & Hreljac, A. (2001). Attenuation of leg impacts during high speed running. Proceedings from the American College of Sports Medicine 48th Annual Meeting: *Medicine and Science in Sports and Exercise*, 33(5), s43.
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Refereed Publications

- Altshuler, D., Dickson, W., **Vance, J.**, Roberts, S., Dickinson, M. (2005). Short amplitude, high frequency wing strokes determine the aerodynamics of honeybee flight. *Proceedings of the National Academy of Sciences*, 102(50):18213-18218
- Vance, J.**, Wulf, G., McNevin, N., Mercer, J.A (2004). EMG activity as a function of the performer's focus of attention. *Journal of Motor Behavior*, 36(4): 450-459
- Mercer, J.A., **Vance, J.**, Hreljac, A., Hamill, J. (2002). Relationship between shock attenuation and stride length during running at different velocities. *European Journal of Applied Physiology*, 87: 403-408.
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Other Publications

- Mercer, J.A., and **Vance, J.** (2002). Put to the test: Do spring boots affect ground reaction forces during running? *Biomechanics Magazine*.
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Grants and Awards

- 2005:** NASA Space Grant Consortium. Nevada Space Grant: \$22,500
 - 2005:** NSF EPSCoR Advanced Computing in Environmental Sciences (ACES) Grant: \$7800
 - 2005:** The Annual Nevada NASA Joint Conference. Best Poster Presentation: \$500
 - 2004:** NSF EPSCoR Advanced Computing in Environmental Sciences (ACES) Grant: \$6800
 - 2002:** UNLV: Biomedical Sciences Research Grant. Travel Fees to Visit Dr. Joseph Hamill at the University of Massachusetts at Amherst: \$750.
 - 2002:** Human Performance and Wellness, Inc.: Consultant and Research Award: \$500
 - 2002:** UNLV: Research Award; Biomechanics Laboratory: \$500
 - 2001:** Equipment grant from Motion Analysis: Mac-Lite camera lighting system: \$100
 - 2001:** UNLV: Dept. of Kinesiology Research Grant. Travel/Conference Fees: \$500
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