

## **PROFESSIONAL VITA**

### **BARRY T. BATES**

#### **PRESIDENT**

Human Performance & Wellness, Inc.  
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#### **PROFESSOR EMERITUS**

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#### **EDUCATION**

Princeton University; Princeton, NJ; 1960; B.S.E.  
East Stroudsburg State College; East Stroudsburg, PA; 1970; M.Ed.  
Indiana University; Bloomington, IN; 1973; Ph.D.  
\*Undergraduate Major Area: Engineering  
\*Graduate Major Area: Human Performance: Biomechanics/Kinesiology  
\*Graduate Minor Area: Motor Learning, Computer Science, Statistics and Design

#### **PROFESSIONAL EXPERIENCE**

2000- Adjunct Professor: University of Nevada-Las Vegas; Las Vegas, NV  
1997- Professor Emeritus: University of Oregon; Eugene, OR  
1996- President: Human Performance & Wellness, Inc.; Eugene, OR  
1985-1996 Professor: University of Oregon; Director: Biomechanics Laboratory; Eugene, OR  
1991-1996 Head: Dept. of Exercise and Movement Science; University of Oregon; Eugene, OR  
1984- President: BioDynamics Foundation; Eugene, OR  
1984-90 Vice President: Bio-Dynamics Corporation; Eugene, OR  
1982-84 Founder, President: Bio-Dynamics Corporation; Senior Scientist; Eugene, OR  
1979-85 Associate Professor: University of Oregon; Director: Biomechanics Lab; Eugene, OR  
1974-79 Assistant Professor: University of Oregon; Director: Biomechanics Lab; Eugene, OR  
1973-74 Assistant Professor: University of Massachusetts; Amherst, MA  
1970-73 Graduate Student: Indiana University; Bloomington, IN  
1968-70 Director of Athletics: Blair Academy; Blairstown, NJ  
1964-70 Teacher of Mathematics: Blair Academy, Head Coach, Football; Blairstown, NJ  
1963-64 Teacher of Mathematics: Randor High School, Assistant Coach; Wayne, PA  
1960-63 Officer: U.S. Navy

#### **PROFESSIONAL ORGANIZATIONS**

American Academy of Kinesiology and Physical Education  
American Alliance for Health, Physical Education, Recreation and Dance  
American Board of Forensic Examiners  
American College of Sports Medicine  
American Society for Testing and Materials  
American Society of Biomechanics  
Human Factors and Ergonomics Society  
International Society of Biomechanics  
International Society for Biomechanics in Sports  
Society of Automotive Engineers

## SELECTED PUBLICATIONS

Bates, B.T. First author of 33, and secondary author of 62 publications prior to 1992.

- Bates, B.T., Dufek, J.S. & Davis, H.P. (1992). The effect of trial size on statistical power. *Medicine and Science in Sports and Exercise*, 24(9): 1059-1068.
- Bates, B.T., Hamill, J., Davis, H.P. & Stergiou, N. (1992). Surface and shoe effects on lower extremity impact characteristics. Proceedings of NACOB II, The Second North American Congress on Biomechanics, (pp. 243-244), Chicago: Organizing Committee.
- Caster, B.L., Bates, B.T. & Dufek, J.S. (1992). A multi-dimensional assessment of the functionality of cross training athletic footwear. Proceedings of NACOB II, The Second North American Congress on Biomechanics, (pp. 275-276), Chicago: Organizing Committee
- Dufek, J.S. & Bates, B.T. (1992). Lower extremity performance models for landing. *Human Movement Science*, 11: 299-318.
- Dufek, J.S., Derrick, T.R. & Bates, B.T. (1992). Variability of two types of landings. Proceedings of NACOB II, The Second North American Congress on Biomechanics, (pp. 551-552), Chicago: Organizing Committee.
- Hamill, J., Bates, B.T. & Holt, K.G. (1992). Timing of lower extremity joint actions during treadmill running. *Medicine and Science in Sports and Exercise*, 24(7): 807-813.
- James, R., Dufek, J.S. & Bates, B.T. (1992). Effects of fatigue on mechanical and muscular components of drop landings. Proceedings of NACOB II, The Second North American Congress on Biomechanics, (pp. 553-554), Chicago: Organizing Committee.
- McCaw, S.T. & Bates, B.T. (1992). Bilateral asymmetry in vertical ground reaction force data during the support phase of running. *Medicine, Exercise, Nutrition and Health*, 1: 352-356.
- Stergiou, N., Bates, B.T. & Davis, H.P. (1992). The effects of midsole hardness on shoe cushioning. Proceedings of NACOB II, The Second North American Congress on Biomechanics, (pp. 269-270), Chicago: Organizing Committee.
- Dufek, J.S., Schot, P.K. & Bates, B.T. (1993). Landing performance II: Assessment and future directions. *Medicine, Exercise, Nutrition and Health*, 2: 135-142.
- Bates, B.T. (1994). Publishing woes revisited. *American Society of Biomechanics Newsletter*, 7(2): 12-13.
- Derrick, T.R., Bates, B.T. & Dufek, J.S. (1994). Evaluation of time-series data sets using the Pearson product-moment correlation coefficient. *Medicine and Science in Sports and Exercise*, 26(7):919-28.
- Schot, P.K., Bates, B.T. & Dufek, J.S. (1994). Bilateral performance symmetry during drop landing: A kinetic analysis. *Medicine and Science in Sports and Exercise*, 26(9): 1153-1159.
- Caster, B.L. & Bates, B.T. (1995). Assessment of mechanical and neuromuscular response strategies during landing. *Medicine and Science in Sports and Exercise*, 27(5): 736-744.
- Dufek, J.S., Bates, B.T. & Davis, H.P. (1995). The effect of trial size and variability on statistical power. *Medicine and Science in Sports and Exercise*, 27(2): 288-295.
- Dufek, J.S., Bates, B.T., Stergiou, N. & James, C.R. (1995). Interactive effects of group and single-subject response patterns. *Human Movement Science*, 14: 301-323.
- Bates, B.T., Zhang, S., Dufek, J.S. & Chen, F.C. (1996). The effects of sample size and variability on the correlation coefficient. *Medicine and Science in Sports and Exercise*, 28(3): 386-391.
- Bates, B.T. (1996). Single-subject methodology: An alternative approach. *Medicine and Science in Sports and Exercise*, 25(5), pp. 631-638.
- Bates, B.T. & Stergiou, N. (1996). Performance accommodation to midsole hardness during running. *Journal of Human Movement Studies*, 31: 189-210.
- Kinoshita, H. & Bates, B.T. (1996). The effect of environmental temperature on the properties of running shoes. *Journal of Applied Biomechanics*, 12: 258-268.
- James, C.R. & Bates, B.T. (1997). Experimental and statistical design issues in human movement research. *Measurement in Physical Education and Exercise Science*, 1: 55-69.
- Bates, B.T. & Stergiou, N. (1997). The relationship between subtalar and knee joint function as a possible mechanism for running injuries. *Gait and Posture*, 6(3): 177-185.
- Bates, B.T. (1999). A Human Performance Model. In: Proc. Oregon State Bar Convention, pp. 1-13.

- Bates, B.T. & Stergiou, N. (1999). Normal patterns of walking and running. In: Sports Medicine of the Lower Extremity (S. Subotnick, Ed), New York: Churchill-Livingstone, pp. 157-165.
- Bates, B.T. & Stergiou, N. (1999). Forces acting on the lower extremity. In: Sports Medicine of the Lower Extremity (S. Subotnick, Ed), New York: Churchill-Livingstone, pp. 167-185.
- Stergiou, N., Bates, B.T. & James, S.L. (1999). Lower extremity asynchrony during running. *Medicine and Science in Sports and Exercise*, 31(11): 1645-1655.
- Chen, F.C. & Bates, B.T. (2000). The relationship between F-scan in-sole pressure system and AMTI force platform system in measuring the ground reaction force in dynamic gait analysis. *Physiotherapy Theory and Practice*, 16(1): 43-53.
- James, C.R., Dufek, J.S & Bates, B.T. (2000). Effects of overuse injury proneness and task difficulty on joint kinetic variability during landing. *Medicine and Science in Sports and Exercise*, 32(11): 1833-44.
- Zhang, S., Bates, B.T., & Dufek, J.S. (2000). Contributions of lower extremity joints to energy dissipation during landings from different heights with different stiffnesses. *Medicine and Science in Sports and Exercise*, 32(4): 812-819.
- Mercer, J.A., Dufek, J.S. & Bates, B.T. (2001). Analysis of peak oxygen consumption and heart rate during elliptical and treadmill exercise. *Journal of Sport Rehabilitation*, 10(1): 48-56.
- Stergiou, N., Jensen, J.L, Bates, B.T., Scholten, S.D. & Tzetzis, G. (2001). A dynamical systems investigation of lower extremity coordination during running over obstacles. *Clinical Biomechanics*, 16: 213-221.
- Bates, B.T., James, C.R. & Dufek, J.S. (2003). Single subject analysis. In: Innovative Analyses of Human Movement (N. Stergiou, Ed.), Champaign, IL: Human Kinetics, 3-28.
- Mercer, J.A., DeVita, P., Derrick, Timothy R., & Bates, B.T. (2003). The individual effects of stride length and stride frequency changes on shock attenuation during running. *Medicine and Science in Sports and Exercise*, 35(2): 307-313.
- Stergiou, N., Bates, B.T., & Kurz (2003). Subtalar and knee joint interaction during running at various stride lengths. *Journal of Sports Medicine and Physical Fitness*, 43(3): 319-326.

## **SELECTED HONORS AND PROFESSIONAL RECOGNITION**

- Visiting Professor, Swiss Federal Institute of Technology, Zurich, Switzerland, September, 1979.
- Member, American College of Sports Medicine Committee on International Relations Delegation to the Soviet Union, Moscow, U.S.S.R., October, 1979.
- Invited Lecturer, Division of Sports Medicine, American Academy of Orthopedic Surgeons, "Biomechanics of Running: New Concepts", San Francisco, CA, 1979.
- Invited Lecturer, American Orthopedic Foot Society, Inc., Twelfth Annual Meeting, Biomechanics of the Foot and Shoe Selection", New Orleans, LA, 1982.
- Keynote Address, International Symposium of Biomechanics Aspects of Sports Protective Equipment, "Testing and Evaluation of Running Shoes", Waterloo, Ontario, Canada, 1983.
- Recipient, Runner's World "Sportsmedicine All-Star Team", One of 25 international sports medicine experts named by peers for "contributions to the physical and emotional health of elite athletes and recreational runners, and to rapidly advancing sports medicine and knowledge", 1984.
- Invited Participant, NASA Glove Workshop, Sponsor: NASA Tech. Applications Team, Houston, TX, 1985.
- Elected Member, American Academy of Kinesiology and Physical Education, 1986.
- Visiting Professor, Beijing Institute of Physical Education, Beijing, People's Republic of China, July, 1988.
- Lifetime Member, President's Associates, University of Oregon, 1992.
- Keynote Speaker, International Society of Biomechanics in Sports, "Individual Accommodation Strategies to Running and Landing Impact Forces", Amherst, MA, 1993.
- Invited Lecturer, Biomechanics Academy Symposium, "Lower Extremity Function: Injury and Performance Factors", Portland, OR, 1995.
- Invited Speaker, International Conference on Women, "Lower Extremity Function During Running and Landing" and "Landing Models: Evaluation of Elite Volleyball Players", Alexandria, Egypt, 1995.
- Invited Speaker, American College of Sports Medicine, "Biomechanics of Running", Cincinnati, OH, 1996.
- Invited Speaker, American College of Sports Medicine, "The Value of the Individual in the Research Paradigm: Single Subject Methodology", Cincinnati, OH, 1996.

Invited Speaker, Eighth National Measurement and Evaluation Symposium, "Experimental and Statistical Design Issues in Human Movement Research", Corvallis, OR, 1996.  
Selected as member of ASICS International Sport Science and Sports Medicine Forum, 1996.  
Certified, Fellow of the American Board of Forensic Examiners, 1997.  
Recipient, *Ruth B. Glassow Award*, Contributions in Applied Biomechanics, Biomechanics Academy, 1999.  
Keynote Speaker, Australasian Podiatry Conference, Methven, New Zealand, 1999.  
Invited Participant, Oregon State Bar Convention, "Using Expert Witnesses to Win", Seaside, OR, 1999.  
Scholar Lecturer, Texas Tech University, "*Hows and Whys of Lower Extremity Injury*", Lubbock, TX, 2001.  
Scholar Lecturer, University of Nevada Las Vegas, "Individual Accommodation to Running Injury", Las Vegas, NV, 2002.  
Hall of Fame Inductee, Muhlenberg High School, Reading, PA, 2002.

## **SELECTED GRANTS**

Developed the Biomechanics Laboratory and co-developed the Biomechanics/Sports Medicine Laboratory. Organized an interdisciplinary research team and was primary administrator for all laboratory grants identified below.

Bates, B.T. Miscellaneous grants to support professional travel, graduate assistantships, and laboratory operations. 46 for \$217,400, 1972-1996.

Bates, B.T. Equipment grants to expand general laboratory function. 12 for \$341,775, 1972-1996.

Bates, B.T., Haven B.H. & Ward P. Women's U.S. Olympic Track and Field Research Project. Indiana University, A.I.A.W. and U.S. Olympic Committee, \$5,000, Summer, 1972.

Bates, B.T., James, S.L. & Osternig, L.R. The Development of Dynamic Objective Tests for the Evaluation of Joint Function During Normal and Abnormal Walking and Running. Northwest Area Foundation, \$60,000, June, 1976-June 1978.

Bates, B.T., James, S.L. & Osternig, L.R. The Development of Dynamic Objective Tests for the Evaluation of Joint Function During Normal and Abnormal Walking and Running. Northwest Area Foundation, \$71,264, January, 1979-December, 1980.

Bates, B.T. Model Biomechanics Laboratory Project in conjunction with the Olympic Scientific Congress, BioDynamics Foundation and ten equipment manufacturers, \$250,000, 1984.

Bates, B.T. et al, (Principal Investigator). Data Acquisition, Analysis and Display System. Computer Equipment Grant, Hedco Foundation, \$47,539, 1988.

Bates, B.T. et al, (Principal Investigator). Aging and Transfer of Training: An Exercise Intervention. NIA: Health and Effective Function in Middle and Later Years, \$118,811 (2 years), January, 1989 - December, 1990.

Bates, B.T. & Dufek, J.S. Biomechanical analyses of barcode scanning, Spectra-Physics, Inc., \$12,750, 1991.

Bates, B.T. & Dufek, J.S. Equipment evaluation projects, Precor USA and BioDynamics Foundation, \$24,000, 1991-92.

Dufek, J.S. & Bates, B.T. Equipment Grant, Ariel Life Systems, Inc., \$73,015, 1991-92.

Bates, B.T. & Dufek, J.S. Qualitative analyses of checker and checkstand performance, Spectra-Physics, Inc., \$1,600, 1992.

Bates, B.T. & Dufek, J.S. Equipment Grant, Penny & Giles, Inc and BioDynamics Foundation, \$3200, 1992.

Bates, B.T. & Dufek, J.S. Equipment Grant, Ariel Life Systems, Inc., \$75,000, 1992.

Bates, B.T. & Dufek, J.S. Equipment Grants, Tekscan, \$2000 and \$17,500, 1992.

Bates, B.T. & Dufek, J.S. Equipment evaluation, Precor USA and BioDynamics Foundation, \$15,000, 1992.

Bates, B.T. Laboratory Operating Funds, ASICS Tiger Corporation, \$3,500, 1992 and 1993.

Bates, B.T. & Dufek, J.S. General Operating Grant for Biomechanics Laboratory. Biomechanical Systems Analysis, \$7,000, 1992 and 1993.

Bates, B.T. Operating Grant for Biomechanics Laboratory. BioDynamics Foundation, \$14,500, 1994-96.

Bates, B.T. & BioDynamics Foundation. Real value of equipment donated to the University of Oregon upon my retirement, \$57,500, 1996.