BRC
BIODYNAMIC RESEARCH CORPORATION

JAMES H. RADDIN, JR., MD, SM

CURRICULUM VITAE

EDUCATION AND CERTIFICATIONS

S.M.	Management (Alfred P. Sloan Fellow), MIT Sloan School of Management, Cambridge, Massachusetts.	1983
M.D.	University of New Mexico School of Medicine	1975
S.B.	Aeronautics and Astronautics, Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts.	1967
	Certified by the American Board of Preventive Medicine in Aerospace Medicine	1985

POST GRADUATE MEDICAL STUDIES

PG-1 in General Surgery 1976-1977
USAF Medical Center,
Keesler AFB, Mississippi

Aerospace Medicine Residency 1983-1984
USAF School of Aerospace Medicine,
Brooks AFB, Texas.

PROFESSIONAL EXPERIENCE

Director and Principal Consultant 1988-Pres
Biodynamic Research Corporation
San Antonio, Texas.

Vice Commander 1985-1988
USAF School of Aerospace Medicine
Brooks AFB, Texas.

Assistant Deputy Commander for Research, Development, and Acquisition	1984-1985
Aerospace Medical Division (now Human Systems Division) Brooks AFB, Texas.	
MIT Sloan Fellow and Aerospace Medicine Resident	1982-1984
Chief Aeromedical Advisor Life Support Systems Program Office Aeronautical Systems Division, Wright-Patterson AFB, Ohio.	1980-1982
Principal Investigator, AF Aerospace Medical Research Laboratory Wright-Patterson AFB, Ohio.	1977-1980
Medical Student and General Surgery Intern	1972-1977
Test Engineer Central Inertial Guidance Test Facility, Holloman AFB, New Mexico.	1968-1972
Graduate Research Assistant MIT Instrumentation Laboratory (now Charles Stark Draper Laboratory) Cambridge Massachusetts.	1967-1968

PROFESSIONAL REGISTRATIONS

Consultant in Aerospace Medicine to the Surgeon General, USAF	1987-1988
Licensed by the State Medical Board of Ohio, License #40980	1977-Pres

PROFESSIONAL AFFILIATIONS

Association for the Advancement of Automotive Medicine (AAAM)	1991-Pres
Society of Automotive Engineers (SAE)	1989
Air Standardization Coordinating Committee's Working Party 61	1980-1985

Air Force Association	1977-Pres
Aerospace Medical Association	1977-Pres

ACADEMIC AFFILIATIONS

Clinical Adjunct Professor, USAF School of Aerospace Medicine	2008-Pres
Guest Lecturer/Residency Seminar Instructor on Impact Injury Causation for USAF School of Aerospace Medicine (Multiple Occasions)	1985-Pres
Assistant Clinical Professor, Community Medicine (Aerospace Medicine), Wright State University School of Medicine, Dayton, Ohio	1980-1983

HONORS AND AWARDS

A. Howard Hasbrook Award from the Life Sciences and Engineering Branch, Aerospace Medical Association	2002
Elected Fellow of the Aerospace Medical Association	2000
John Paul Stapp Award from the Aerospace Medical Association	2000
The Legion of Merit	1988
Air Force Meritorious Service Medal	1980; 1982
Air Force Commendation Medal	1972; 1981
Air Force Systems Command Flight Surgeon of the Year	1977
Distinguished Graduate, Primary Course in Aerospace Medicine	1976
Alpha Omega Alpha National Medical Honorary Society	1974
Air Force Systems Command Award for Technical Achievement	1971
Distinguished Military Graduate, MIT	1967
Sigma Gamma Tau National Aeronautical Engineering Honorary Society	1966

PUBLICATIONS AND PRESENTATIONS

THESES:

Raddin, James H. Jr.; Discretionary Funds in Research and Development: A Case Study in Military Biotechnology Management, Master's Thesis, Massachusetts Institute of Technology Sloan School of Management, Cambridge, Massachusetts, May, 1983.

TEXTBOOKS:

Brinkley, James W. and J.H. Raddin, Jr.; "Biodynamics: Transitory Acceleration" in Fundamentals of Aerospace Medicine, Roy L. DeHart, Editor, Lea and Febiger, 1985. (Second Edition, 1996, Third Edition 2002.)

OTHER PUBLICATIONS:

Raddin, James H. Jr.; "A Mass-Unbalance Torquing Scheme for the SABRE Guidance System" (Classified), MIT Instrumentation Laboratory (now Charles Stark Draper Laboratory) Technical Report, Cambridge, Massachusetts, January, 1968.

Raddin, James H. Jr.; "Gyroscope Temperature Gradient Study," Working Paper MDSLG-68-6, Central Inertial Guidance Test Facility, Holloman AFB, New Mexico, June, 1968.

Raddin, James H. Jr., and R. Thede; "Slipring Resistance Stability and Its Effect in Gyroscope Testing," Working Paper MDSLG-69-2, Central Inertial Guidance Test Facility, Holloman AFB, New Mexico, January, 1969.

Raddin, James H. Jr.; "Gyroscope Thermal Gradient Test Investigation," Working Paper MDSLG-69-4, Central Inertial Guidance Test Facility, Holloman AFB, New Mexico, April, 1969.

Raddin, James H. Jr., and W. Langley; "Space Precision Attitude Reference System (SPARS) MOD 1A, Project 681D1 Test Plan," Central Inertial Guidance Test Facility, Holloman AFB, New Mexico, June, 1970.

Raddin, James H. Jr.; "Documentation of a Gyroscope Thermal Gradient Sensitivity Test." Presented by Lieutenant Raddin at the Fifth Guidance Test Symposium, Central Inertial Guidance Test Facility, Holloman AFB, New Mexico, October, 1970, and published in the proceedings (Volume 1, AFSWC-TR-19).

Raddin, James H. Jr. and R. Thede; "Space Precision Attitude Reference System (SPARS) and Precision Earth Pointing System (PEPSY) MOD 1B, Project 681D1 Test Plan," Central Inertial Guidance Test Facility, Holloman AFB, New Mexico, October, 1970.

Raddin, James H. Jr. and R. Thede; "Precision Earth Pointing System (PEPSY) Phase 1B Final Test Report, Part II: SPARS/PEPSY Laboratory Test at the Central Inertial Guidance Test Facility," Space and Missile Systems Organization (AFSC), Los Angeles AFS, California, May, 1971.

Raddin, James H. Jr.; "Laboratory Test of the Space Precision Attitude Reference System/Precision Earth Pointing System (SPARS/PEPSY)" (Classified). Presented by Captain Raddin at the Air Force Systems Command Science and Engineering Symposium, Dayton, Ohio, October, 1971, and published in the proceedings.

Raddin, James H. Jr.; "Assessment of Risk Associated with Ejection Through the Canopy." Presented by Dr. Raddin at the 50th Annual Scientific Meeting of the Aerospace Medical Association, Washington, D.C., May, 1979 and published as a preprint at the meeting.

Brinkley, James W., J.H. Raddin, Jr., and J.M. Powers; "Investigation of the Effects of Restraint Design Variations on Human Response to Impact." Presented by Mr. Brinkley at the 50th Annual Scientific meeting of the Aerospace Medical Association, Washington, D.C., May, 1979 and published as a preprint at the meeting.

Raddin, James H. Jr., L.J. Specker, and J.W. Brinkley; "Minimizing the Sequenced Delay Time for Escape from High-Speed, Low-Level Flight Profiles." Presented by Dr. Raddin at the NATO AGARD Conference on High-Speed, Low-level Flight: Aircrew Factors, Lisbon, Portugal, October, 1979, and published in the proceedings (AGARD-CP-267).

Raddin, James H. Jr., J.W. Brinkley and B.F. Hearon; "The Implications of Dynamic Preload in Human Impact Tolerance." Presented by Dr. Raddin at the 51st Annual Scientific Meeting of the Aerospace Medical Association, Anaheim, California, May, 1980, and published as a preprint at the meeting.

Hearon, Bernard F. and J.H. Raddin, Jr.; "Experience with Highly Selective Screening Techniques for Acceleration Stress Duty." Presented by Dr. Hearon at the NATO AGARD Conference on the Effect of Long-term Therapeutics, Prophylaxis and Screening Techniques on Aircrew Medical Standards, Toronto, Canada, September, 1980, and published in the proceedings (AGARD-CP-310).

Brinkley, James W., B.F. Hearon, and J.H. Raddin, Jr.; "Influence of F/FB-111 Crew Seat and Restraint Configuration Changes on Responses of Volunteers to +GZ Impact." Presented by Mr. Brinkley at the 52nd Annual Scientific Meeting of the Aerospace Medical Association, San Antonio, Texas, May, 1981, and published as a preprint at the meeting.

Hearon, Bernard F., J.W. Brinkley, and J.H. Raddin, Jr.; "The Effects of Dynamic Preload on Human Response to -GX Impact Acceleration." Presented by Dr. Hearon at the 52nd Annual Scientific Meeting of the Aerospace Medical Association, San Antonio, Texas, May, 1981, and published as a preprint at the meeting.

Brinkley, James W., J.H. Raddin, Jr., B.F. Hearon, L.A. McGowan, and J.M. Powers; Evaluation of a Proposed, Modified F/FB-111 Crew Seat and Restraint System. Technical Report AFAMRL-TR-80-52, AF Aerospace Medical Research Laboratory, November, 1981. 414 pp.

Raddin, James H. Jr.; "Improvements to Aircraft Oxygen Systems – The Intentions of the United States Air Force." Presented by Dr. Raddin at the Air Standardization Coordinating Committee Working Party 61 Oxygen Systems Symposium, Farnborough, England, November, 1981, and published in the proceedings.

Raddin, James H. Jr.; "Fluomine Chemical Absorption System: USAF Experience." Presented by Dr. Raddin at the Air Standardization Coordinating Committee Working Party 61 Oxygen Systems Symposium, Farnborough, England, November, 1981, and published in the proceedings.

Raddin, James H. Jr. and G.R. McNutt; "Improvements in Design and Performance of USAF Aircrew Masks and Helmets." Presented by Major McNutt at the Air Standardization Coordinating Committee Working Party 61 Oxygen Systems Symposium, Farnborough, England, November, 1981, and published in the proceedings.

Raddin, James H. Jr. and B. F. Hearon; "Dynamic Preload as an Impact Protection Concept." Presented by Dr. Raddin at the SAFE Silver Anniversary Symposium, Las Vegas, Nevada, December, 1981, and published in the proceedings.

Hearon Bernard F., H.A. Thomas, and J.H. Raddin, Jr.; "Mechanism of Vertebral Fracture in the F/FB-111 Ejection Experience" in Aviation, Space and Environmental Medicine, 53(5): 440-8, 1982.

Hearon, Bernard F., J.W. Brinkley, J.H. Raddin, Jr., L.A. McGowan, and J.M. Powers; Comparative Vertical Impact Testing of the F/FB-111 Crew Restraint System and a Proposed Modification. Technical Report AFAMRL-TR-82-13, AF Aerospace Medical Research Laboratory, 1982. 308 pp.

Hearon, Bernard F., J.H. Raddin, Jr., and J.W. Brinkley; "Influence of Dynamic Preload on Human Response to Transverse (-GX) Impacts." Presented by Dr. Hearon at the 53rd Annual Scientific Meeting of the Aerospace Medical Association, Bal Harbor, Florida, May, 1982, and published as a preprint at the meeting.

Hearon, Bernard F., J.H. Raddin, Jr., and J.W. Brinkley; "Evidence for the Utilization of Dynamic Preload in Impact Injury Prevention." Presented by Dr. Hearon at the NATO AGARD Conference on Impact Injury Caused by Linear Acceleration: Mechanisms, Prevention and Cost, Cologne, Federal Republic of Germany, April, 1982, and published in the proceedings (AGARD-CP-322).

Hearon, Bernard F., J.W. Brinkley, J.H. Raddin, Jr., L.A. McGowan, and J.M. Powers; Evaluation of the Influence of Upper Extremity Bracing Techniques on Human Response During Vertical Impact. Technical Report AFAMRL-TR-82-54, AF Aerospace Medical Research Laboratory, August, 1982. 221 pp.

Hearon, Bernard F., J.W. Brinkley, J.H. Raddin, Jr., and B. W. Fleming, Jr.; "Knee Ligament Injury During Lateral Impact" in Aviation, Space and Environmental Medicine, 56(1):1-9, January, 1985.

Raddin, James. H. Jr.; "A Perspective on Human Performance as the Limiting Factor in Aircraft Performance," Guest Editorial in Aviation, Space and Environmental Medicine, 58(5):393-4, May, 1987.

Raddin, James H. Jr., M.D., William R. Scott, Ph.D., James Ziegler, M.S.E., James V. Benedict, Ph.D., M.D., Harry L. Smith, Ph.D., M.D.; Concept Feasibility Analysis for a Large Radius Track-Centrifuge, Final Report for Research Conducted under U.S.A.F. Small Business Innovation Research Contract #F41622-89-C-1025. Submitted for Publication as U.S.A.F. School of Aerospace Medicine Technical Report, February, 1990.

Raddin, James H. Jr., M.D., James Ziegler, M.S.E., James V. Benedict, Ph.D., M.D., Harry L. Smith, Ph.D., M.D.; An Active Neck Protection System for Crewmembers of High Performance Aircraft, Final Report for Research Conducted under U.S.A.F. Small Business Innovation Research Contract F41622-89-C-1024. Submitted for Publication as U.S.A.F. School of Aerospace Medicine Technical Report, February, 1990.

Howard, Richard P., M.D., M.S.; James V. Benedict, Ph.D., M.D.; James H. Raddin Jr., M.D. S.M.; Harry L. Smith, Ph.D., M.D.; "Assessing Neck Extension-Flexion as a Basis for Temporomandibular Joint Dysfunction," Journal of Oral and Maxillofacial Surgery, 49:1210-1213, 1991.

Raddin, James H. Jr., M.D.; William R. Scott, Ph.D.; John B. Bomar, Jr., Ph.D.; Harry Smith, Ph.D., M.D.; James V. Benedict, Ph.D., M.D.; Whitman E. McConnell, M.D.; Patricia K. Perret; Herbert M. Guzman; Adapting the Adam Manikin Technology for Injury Probability Assessment, Final Report for Period July, 1991 to February, 1992, Prepared for Armstrong Laboratory, Human Systems Division, Crew Systems Directorate, United States Air Force, Brooks AFB, Texas.

McConnell, Whitman E.; Richard P. Howard; Herbert M. Guzman; John B. Bomar; James H. Raddin, Jr.; James V. Benedict; Harry L. Smith; and Charles P. Hatsell; "Analysis of Human Test Subject Kinematic Responses to Low Velocity Rear End Impacts." SAE Technical Paper #930889, March 1993.

Scott, Michael W.; Whitman E. McConnell; Herbert M. Guzman; Richard P. Howard; John B. Bomar; Harry L. Smith; James V. Benedict; James H. Raddin; and Charles P. Hatsell; "Comparison of Human and ATD Head Kinematics During Low-Speed Rearend Impacts." Presentation to Society of Automotive Engineers, Inc., 1993 SAE International Congress & Exposition, Detroit, MI, SAE Paper #930094, March 1993.

Pancratz, David J., P.E.; John B. Bomar, Jr., Ph.D.; and James H. Raddin, Jr., M.D.; Modelling Platform Dynamics and Physiologic Response to Short Arm Centrifugation, Final Report for Period May, 1993 to December, 1993. Prepared for Armstrong Laboratory, Human Systems Division, Crew Systems Directorate, United States Air Force, Brooks AFB, Texas.

Pancratz, David J., M.S.; John B. Bomar, M.S., Ph.D.; and James H. Raddin, Jr., M.D., "New Source for Vestibular Illusions in High Agility Aircraft," Aviation, Space, and Environmental Medicine, December 1994, Volume 65, Pages 1130-1133.

McConnell, Whitman E.; Howard, Richard P.; Van Poppell, Jon; Krause, Robin; Guzman, Herbert M.; Bomar, John B.; Raddin, James H.; Benedict, James V.; and Hatsell, Charles P.; "Human Head & Neck Kinematics After Low Velocity Rear-End Impacts - Understanding 'Whiplash'," Presentation to Society of Automotive Engineers, Inc., 39th Annual Stapp Car Crash Conference Proceedings, Coronado, CA, November 1995.

Raddin, James H., Jr., M.D.; "The Physical Basis of Impact Injury and its Prevention" presented by Banks, Robert D., BEng, M.D. at the AGARD AMP Lecture Series on "Injury Prevention in Aircraft Crashes: Investigative Techniques and Applications", held in Farnborough, UK, 24-25 November 1997, and Madrid, Spain,1-2 December 1997, and published in LS-208.

Raddin, James H., Jr., M.D.; "Principles of Crash Survivability" presented by Banks, Robert D., BEng, M.D. at the AGARD AMP Lecture Series on "Injury Prevention in Aircraft Crashes: Investigative Techniques and Applications", held in Farnborough, UK, 24-25 November 1997, and Madrid, Spain, 1-2 December 1997, and published in LS-208.

Howard, Richard P., Hatsell, Charles P., Raddin, James H.; "Initial Occupant Kinematics in the High Velocity Vehicle Rollover" presented at International Body Engineering Conference Exposition, Detroit, MI, September, 1999. SAE Technical Paper #1999-01-3231.

Benedict, James V., Raddin, James H. Jr., Sicking, Dean L., Reid, John D.; "Official Accident Report - No. 3 Car" for NASCAR presented by Dr. Raddin and Dr. Sicking in Atlanta, Georgia on August 21, 2001 and distributed by NASCAR on that date.

Raddin, James H. Jr., Brinkley, James W., Hearon, Bernard F., and Cormier, Joseph M.; "Effect of Dynamic Preload on Human Response to Forward-Facing Impact" presented at the 75th Annual Scientific Meeting of the Aerospace Medical Association, May 3 – 6, 2004, Anchorage, Alaska.

Brinkley, James W., Cormier, Joseph M., Raddin, James H. Jr.; "Linearity of Human Responses to $^{+}$Z Axis Acceleration" presented at the 75th Annual Scientific Meeting of the Aerospace Medical Association, May 3 – 6, 2004, Anchorage, Alaska.

SHORT COURSE PRESENTATIONS

Raddin, James H. Jr., "Physics of Car Crashes", "Side Impacts" and "Rollovers" at the short course Impact Biomechanics for the Health Care Professions sponsored by the Association for the Advancement of Automotive Medicine in Chicago, Illinois on October 1, 2000.

Raddin, James H. Jr., "Aviation Injury Causation Analysis" in the short course on Biomechanics of High-Impact Injury, jointly sponsored by the Association for the Advancement of Automotive Medicine and the National Transportation Safety Board at the NTSB Training Center, George Washington University, Washington, D.C., April 2-3, 2007.

Raddin J, Cormier J, Smyth B, Croteau J, Cooper E: Compressive Neck Injury and its Relationship to Head Contact and Torso Motion during Vehicle Rollovers SAE 2009-01-0829, *Society of Automotive Engineers (SAE) Congress*, Detroit, MI; 2009.