

## Curriculum Vitae

### KENNETH HARRINGTON MCKEEVER, Ph.D., FACSM

Department of Animal Science  
 School of Environmental and Biological Sciences  
 Rutgers, The State University of New Jersey  
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**Rank:** Professor, Department of Animal Science

#### Education:

1985-1987	National Academy of Sciences-National .. Research Council Resident Research Associate .. at the NASA-Ames Research Center	Post-Doctoral Training
1981-1984	University of Arizona	Ph.D. Animal Physiology
1979-1981	Fresno State University	M.S. Animal Science
1974-1979	California State Polytechnic University Pomona	B.S. Animal Science

**General Fields of Interest:** On a basic level my research has focused on comparative exercise and cardiovascular physiology with a particular interest in baroreceptor function and renal and neuroendocrine control of blood pressure, blood volume and fluid and electrolyte balance. On an applied level, my research has focused on the effects of ergogenic (performance enhancing) practices on the physiological responses of the equine athlete.

#### Professional Experience:

2009-	<b>Professor.</b> Department of Animal Science, School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey, New Brunswick, NJ.
2002-	<b>Associate Director for Research.</b> Equine Science Center, Department of Animal Science, School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey, New Brunswick, NJ.
2014	<b>Full Member.</b> Graduate Program in Microbial Biology, Rutgers, The State University of New Jersey, New Brunswick, NJ.
2012-	<b>Full Member.</b> Graduate Program in Kinesiology and Applied Physiology, Rutgers, The State University of New Jersey, New Brunswick, NJ.
2006-	<b>Full Member.</b> Graduate Program in Physiology and Integrative Biosciences, Rutgers, The State University of New Jersey, New Brunswick, NJ.

- 1995- **Full Member.** Graduate Program in Endocrinology and Animal Biosciences, Rutgers, The State University of New Jersey, New Brunswick, NJ.
- 1995-2009 **Associate Professor.** Department of Animal Science, School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey, New Brunswick, NJ.
- 1989-1994 **Assistant Professor and Co-Director of the Equine Exercise Physiology Program.** Department of Veterinary Clinical Sciences, College of Veterinary Medicine, The Ohio State University, Columbus, OH.
- 1989-1994 **Assistant Professor (Regular, No Salary, Joint Appointment).** School of Health Physical Education and Recreation. The Ohio State University, Columbus, OH.
- 1988-1989 **Instructor (Non-Tenure Track, Joint, Non-Salary, Regular Appointment).** School of Health Physical Education and Recreation. The Ohio State University, Columbus, OH..
- 1987-1989 **Instructor (Non-Tenure Track, Regular Appointment) and Co-Director of the Equine Exercise Physiology Program.** Department of Veterinary Clinical Sciences, College of Veterinary Medicine, The Ohio State University, Columbus, OH.
- 1986-1987 **National Academy of Sciences-National Research Council Resident Research Associate.** Cardiovascular Research Lab, NASA-Ames Research Center, Moffett Field, CA.
- 1985-1986 **National Aeronautics and Space Administration Post-Doctoral Research Associate.** Cardiovascular Research Laboratory, NASA-Ames Research Center, Moffett Field, CA.
- 1985-1987 **Night Custodian and Floor Care Specialist.** Bayshore Animal Hospital, San Mateo, CA.
- 1985-1985 **Substitute Teacher.** Tulare County Department of Education, Porterville, Visalia, Tulare, and Lindsay School Districts.
- 1/85-3/85 **Staff Research Assistant.** University of Arizona, Department of Animal Sciences, Tucson.
- 1983-1984 **Graduate Research Associate.** University of Arizona, Department of Animal Sciences, Tucson, AZ (Efforts achieved a 90% live foal rate).
- 1981-1984 **Manager.** University of Arizona Equine Research Center, Department of Animal Sciences, University of Arizona Agricultural Experiment Station, Tucson, AZ.
- 1981-1981 **Assistant Manager.** Post Time Thoroughbred Ranch, Road 184, Tulare, CA.
- 1980-1981 **Graduate Research Assistant.** Department of Animal Sciences, Fresno State University Fresno, CA
- 1975-1979 **Lifeguard, Summer Youth Program Aquatics Supervisor, and Pool Maintenance Worker.** California State Polytechnic University, Pomona, CA.
- 1973-1975 **Aquatics Director and Swim Coach,** Yorba Linda Country Club, Yorba Linda, CA.
- 1971-1973 **Driving Range, Cart Room Worker, and Dishwasher,** Yorba Linda Country Club, Yorba Linda CA.

## Awards and Honors:

- 2014 Elected - International Committee of the International Conference on Equine Exercise Physiology (ICEEP) – One of eight members from around the world elected to serve 12 year terms to guide the organization. ICEEP is the pre-eminent organization devoted to scientific research into the physiology, health, and function of equine athletes..
- 2013 Distinguished Service Award in Equine Science - Equine Science Society – The Distinguished Service Award in Equine Science is designed to recognize outstanding contributions to the field of equine science. This award is the most prestigious honor that the Equine Science Society can bestow upon one of its members. Individuals receiving this award possess high moral character and have a record of outstanding accomplishments in teaching, research and extension or service as it relates to advancement of the equine sciences and horse industry.
- 2013 All-American Award - Masters National Championship - United States of America Water Polo
- 2005 Volunteer of the Year Award - Rutgers College Office of Recreational Services.  
Presented for service in 2004-2005 for coaching the water polo club and advising its student members.
- 2003 The George Fleming Prize - The Veterinary Journal – The award, commemorating the founder of *The Veterinary Journal*, Professor George Fleming (1833-1901) is awarded for the paper that is the most meritorious published in the *Journal* during the year. Judged on scientific content and originality, style and readability, and contribution to scientific and veterinary knowledge.
- 2003 Faculty Service Award - Graduate Program in Animal Sciences – Presented by the graduate students to a faculty member who has made a significant contribution to the efforts of the students and the program.
- 2003 Who's Who in Education
- 2002 Who's Who in Medicine and Healthcare
- 1997 Team Building Award - Executive Dean Cook College-NJAES
- 1996 Who's Who in Science and Engineering
- 1990 Fellow - American College of Sports Medicine
- 1988 Young Investigator Award - Central Ohio Heart Association 1988 Young Investigator Award
- 1986 Resident Research Associateship - National Academy of Sciences-National Research Council/NASA Resident Research Associateship
- 1985 Post-Doctoral Research Associateship - NASA Ames Research Center
- 1981 University of Arizona Graduate Tuition Scholarship
- 1979 Moorman Feed Manufacturing Company of California Scholarship
- 1980 United States Agency for International Development-Board for Food & Agricultural Development Graduate Fellowship
- 1980 Fresno Ag-1 Foundation Graduate Student Scholarship.
- 1974 Four varsity letters-goaltender, Cal Poly Pomona's California Collegiate Athletic Association four time conference champion water polo team: 1974, 1975, 1976, 1977.
- 1974 Honors at Entrance, Cal Poly Pomona.
- 1974 Air Force JrROTC - American Legion Scholastic Merit Award
- 1973 All Orange League Water Polo Team, Goaltender
- 1973 Eagle Scout with Silver Palm

### **Professional/Academic Association Memberships:**

- 1985 American College of Sports Medicine (Fellow, 1990).
- 1984 American Society of Animal Science.
- 1992 American Physiological Society.
- 1992 Federation of American Societies of Experimental Biology.
- 1995 Advisory Board-International Association of Equine Professionals
- 1987 Association for Equine Sports Medicine.
- 1984 Equine Science Society (formerly - Equine Nutrition and Physiology Society).
- 1984 Sigma Xi.

### **Reviewing and Editorial Service:**

#### ***Editorial Advisory Boards***

- 2012-Present Editor-in-Chief - Comparative Exercise Physiology.
- 2011-Present Review Editor - Frontiers in Exercise Physiology
- 2004-Present Editor-in-Chief - International Journal of Kaatsu Training Research'
- 1997-Present Editorial Board-Journal of Equine Veterinary Science.
- 2006-2011 North American Editor - Comparative Exercise Physiology (formerly, Equine and Comparative Exercise Physiology)
- 2007-2011 The Open Veterinary Science Journal
- 2009-2011 Editorial Board-Journal of Animal Science
- 2003-2010 Editorial Advisory Board - The Veterinary Journal.
- 2006-2009 Editorial Board - Domestic Animal Endocrinology.
- 2006-2009 Executive Board-The Veterinary Journal (formerly The British Veterinary Journal).
- 2002-2005 Editorial Board-Equine and Comparative Exercise Physiology - The International Journal of Animal Exercise Physiology, Biomechanics, and Nutrition..
- 2001-2002 Editorial Board-Equine Science International
- 1999-2001 Board of Scientific Reviewers - American Journal of Veterinary Research
- 1993 Exercise Physiology Section Editor - Proceedings 13th Equine Nutrition and Physiological Society Symposium.

#### ***Grant Proposal Referee***

- Proposal Referee, American Heart Association (2009)
- Proposal Referee, Georgian National Science Foundation (GNSF) (2005-present)
- Proposal Referee, Romanian National Council for Scientific Research (2011-present)
- Proposal Referee, Horserace Betting and Levy Board, Veterinary Advisory Committee, London, UK
- Proposal Referee, Austrian Science Fund (FWF)
- Proposal Referee, University of Guelph/OMAFRA/EP Taylor/OHRIA Equine Research Program
- Proposal Reviewer - State of Minnesota Racing Commission.

*Ad Hoc Scientific Journal Referee*

- Animal Science Journal
- Journal of Animal Science and Biotechnology
- Frontiers in Physiology
- Biosensors
- Diabetes Research and Clinical Practice
- Journal of Diabetes Science and Technology
- Pharmacology and Experimental Therapeutics
- Animal: An International Journal of Animal Bioscience.
- Biopolymers
- Muscle and Nerve
- Equine Veterinary Education
- Canadian Journal of Applied Physiology
- Medicine and Science in Sport and Exercise
- Veterinarni Medicina (Vet Med - Czech) International Journal for Veterinary and Biomedical Sciences
- Domestic Animal Endocrinology
- Editorial Board-Equine and Comparative Exercise Physiology
- British Journal of Sports Medicine.
- The Veterinary Journal (formerly The British Veterinary Journal)
- Journal of Applied Physiology
- American Journal of Physiology
- Journal of the American Veterinary Medical Association
- Equine Veterinary Journal
- International Journal of Sports Medicine
- Journal of Veterinary Internal Medicine
- Journal of Equine Veterinary Science
- Respiration Physiology
- Horse Industry Handbook
- Cornell Veterinary Journal
- Refereed Proceedings 3rd International. Conference on Equine Exercise Physiology.
- Exercise Physiology Section-Proceedings 12th Equine Nutrition and Physiological Society Symposium.
- Abstract Referee - American College of Sports Medicine, 1994 and 1995 Programs.
- Abstract Referee - Equine Nutrition & Physiological Society Symposium, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005.

## **Other Service and Professional Assignments:**

### ***External Service to the Equine Industry and the Academic Community***

- 2015-2017 Elected Member - Animal Care and Experimentation Committee of the American Physiological Society
- 2014 Session Chair - Physiotherapy, Rehabilitation & Performance Section, 9th International Conference on Equine Exercise Physiology, Chester, England.
- 2014 Expert Scientific Witness - provided key testimony on behalf of the New York Standardbred Owners Association at the New York Gaming Commission Hearing on "Proposed Adoption of Controlled Therapeutics Medication" rules published in the December 4, 2013 State Register at pages 17-35.
- 2014 Interview for Equus Magazine on exercise for the older horse.
- 2013-2015 Secretary/Treasurer - Equine Science Society
- 2013 Interview for DVM Magazine regarding EPO and blood doping.
- 2012 Series of interviews for the New York Times regarding drug use in race horses.
- 2010 Extended interview for MSNBC Online regarding the physiology of race horses, a story coordinated with the release of the movie Secretariat.
- 2010 USDA External Review Panel - 2010 review of the research, teaching, and outreach program of the Department of Animal Sciences at the University of Maine .
- 2009-2010 Co-Editor and Co-Session Chair Cardiovascular Section, 8th International Conference on Equine Exercise Physiology, Capetown, South Africa.
- 2009-2013 Board of Directors Equine Science Society.
- 2009 Graduate Competition Judge Exercise Physiology - 21st Equine Science Society Symposium
- 2009-2011 Invited International Expert (One of 4) - Scientific Advisory Committee, Equine Drug Research Institute, a joint effort of the Anti-Doping Research Organization and the Grayson-Jockey Club Foundation. Provide expert advise on drug detection methods and funding requests. Publication of joint efforts. Formulation of a Code of Conduct for the Horse Industry.
- 2008 Invited Panelist - American College of Sports Medicine International Health & Science Exchange at the National Press Club, Washington, D.C. This was the kickoff event for a joint effort between the ACSM and the Sato Sports Plaza, Ltd., a Japanese company that developed KAATSU training, an innovative muscle conditioning technique. The collaboration is an effort to globalize the advancement of ideas, information, and new techniques in health and fitness.
- 2008-2011 External Examiner - University of Limerick, Equine Studies Program - Four year term to review exams and to meet on the final disposition of students in both the degree and certificate programs offered by the International Equine Institute and the university.
- 2007-2013 Nominating Committee - Equine Science Society.
- 2007 Expert Witness - New York Racing State Racing and Wagering Board.
- 2006-2008 Expert Witness/Consultant - Delaware Standardbred Owners Association.
- 2006-present Expert Witness/Consultant - Various private plaintiff and defense counsel.
- 2003-2005 Representative - Racing Medication and Testing Consortium.

- 2002-2004 Representative- New Jersey Department of Agriculture Equine Advisory Board.
- 2001-2011 Expert Panelist - NY State Racing and Wagering Board Medication Advisory Committee.
- 2000-2004 Expert Witness -Maryland Attorney General and the Maryland Racing Commission.
- 1998-2013 Expert Witness/Consultant -New Jersey Attorney General/NJ Racing Commission.
- 2006 Television interview for “Pet Stop” on News 12 New Jersey.
- 2006 Extended interview for an American Physiological Society press release on the physiology of the Kentucky Derby. Item published in online and paper outlets.
- 2005 Session Chair - Exercise Physiology, 19th Equine Science Society Symposium.
- 2005 Graduate Competition Judge (Production & Extension)-19th Equine Science Society Symposium.
- 2005 Chair - Exercise Physiology Program Committee, 19th Equine Science Society Symposium.
- 2003 Extended interview regarding test for EPO misuse for Equus Magazine.
- 2003 Extended interview regarding test for EPO misuse for Bloodhorse Magazine.
- 2003 Session Chair - Exercise Physiology, 18th Equine Nutrition & Physiology Society Symposium.
- 2002 Session Chair - 6th International Conference on Equine Exercise Physiology, Lexington, Kentucky.
- 2001 Interview for article on clenbuterol for Equus Magazine.
- 2001 Interview for article on clenbuterol for the Horsemen’s Journal.
- 2000 Conference Host and Organizer - 20th Association of Equine Sports Medicine meeting,, New Brunswick, NJ.
- 2000 Conference Host and Organizer - 5th Conference of Equine Exercise Physiology Researchers, New Brunswick, NJ.
- 1998 Session Chair, Cardiovascular Physiology, 5th International Conference on Equine Exercise Physiology, Japan.
- 1996-2000 Organizing Committee - 1<sup>st</sup> - 4<sup>th</sup> Conferences of Equine Exercise Physiology Researchers, Columbus, OH, E. Lansing, MI, Pullman, WA, and Rutgers.
- 1996-2000 Horse Judge, NJ Department of Agriculture Festival of Horses, Standardbred show.
- 1996-2003 Cook College Campus Agricultural Animal Faculty Advisory Committee.
- 1993-2000 NIH/ADAMAHA Peer Review Consultant
- 1993-1997 Awards and Graduate Student Competition Committee, Equine Nutrition and Physiological Society.
- 1990-1995 Editorial Committee - Horse Industry Handbook
- 1993 Invited Panelist - Rolex Kentucky Horse Park 3-Day Event Symposium on Exercise Physiology Research Directions for the 1996 Olympics in Atlanta.
- 1993 Chair - Exercise Physiology Program Committee 13th Equine Nutrition and Physiology Society Symposium.
- 1990 Invited Panelist - Symposium on Exercise Testing Methods - 3rd ICEEP, Uppsala, Sweden (One of 5 panelist from around the world invited to sit on this committee)

- 1988 Lecturer - American Heart Association Central Ohio Affiliate Speakers Bureau.
- 1988 Question Writer-American College of Veterinary Internal Medicine Qualifier Exam.
- 1988 Interview for article in Practical Horseman Magazine.

***Service to the University***

- 2011-Present Member Rutgers University Animal Care and Facilities Committee.
- 2011-Present Faculty Mentoring Committee for Dr. Brandon Alderman, Assistant Professor Department of Exercise and Sport Studies.
- 2011-Present Faculty Mentoring Committee for Dr. Sarah Chelland Campbell, Assistant Professor Department of Exercise and Sport Studies.
- 2009-Present University College Community Volunteer Veteran-Mentoring Program.
- 2008-Present Promotion and Reappointment Committee (Arent, Alderman, Henderson, Campbell) Department of Exercise and Sport Studies.
- 2007-Present Executive Committee - New Brunswick Faculty Council, Rutgers University.
- 2006-Present Chairman - Student Affairs Committee - New Brunswick Faculty Council, Rutgers, the State University of New Jersey
- 2000-Present Senator - University Senate, Rutgers, the State University of New Jersey.
- 2000-Present Member - University Senate Budget and Planning Committee.
- 2001-Present Representative - New Brunswick Faculty Council, Rutgers University.
- 2011-2013 Faculty Mentoring Committee for Dr. Gregory Henderson, Assistant Professor Department of Exercise and Sport Studies.
- 2011-2012 Executive Committee - Rutgers University Senate
- 2011-2012 Past-Chairman-New Brunswick Faculty Council, Rutgers University
- 2010-2011 Chairman - New Brunswick Faculty Council, Rutgers University
- 2009-2010 Vice Chairman - New Brunswick Faculty Council, Rutgers University.
- 2001-2005 Member - Graduate and Professional Studies Committee - New Brunswick Faculty Council, Rutgers, the State University of New Jersey.

***Service to the College***

- 2013-present Structure and Governance Committee, School of Environmental and Biological Sciences.
- 2009-2010 Search committee for three faculty positions - Exercise Science and Sport Studies.
- 2000-2001 Rutgers-NJAES Strategic Planing Sub-Committee.
- 2002-2003 Cook College Admissions and Scholastic Standing Committee.
- 1996-98, 2003 Cook Scholars Program, session chair.
- 1996-1998 George H. Cook Honors Program Adjunct Committee Member.
- 1993 Faculty Search Committee - Appointed by the OSU Vice President for Student Affairs to fill position of Director of Recreation and Intramural Sports.
- 1989 Faculty Search Committee - School of Health, Physical Education, Recreation, OSU.
- 1988-1994 Ohio State University Alice L. Finley Memorial Research Center Committee.
- 1988-1990 Coordinator of the Comparative Physiology and Pharmacology Seminar.



***Service to the Department***

- 2013 Reappointment Reading Committee (Roepke)
- 2008-2009 Faculty Search Committee - Three positions for the Endocrine cluster hire
- 2005-2008 Department Chair's Advisory Committee
- 2005-2006 Chair Standards Committee - Animal Science Graduate Program, Rutgers University.
- 2002-2006 Member - Standards Committee - Animal Science Graduate Program, Rutgers Univ..
- 1998-2003 Animal Science Graduate Program Admissions Committee.
- 2001 Faculty Search Committee - Genetics/Genomics Position.
- 2001 Faculty Search Committee - Endocrinology/Transgenics position.
- 1989 Faculty Retreat Graduate and Residency Program Review Committee.

**Research Support:**

**Grants and Contracts Funded (PI or Co-PI):**

**2014 - Principal Investigator, Arkion Life Sciences, LLC. Efficacy of a hyper-immune egg supplement for the promotion of muscle recovery following intense exercise, Approved by sponsor to begin in 2016: \$305,617.**

**2014 - Principal Investigator, Equine Sports Medicine Consultants, LLC FDA Requested Follow-up Experiments - Dose Selection of E4021 for Strenuously Exercising Equine using a Treadmill Approved by sponsor to begin in 2015: \$315,000.**

**2014 - Co-Principal Investigator (Maylin, McKeever, and Malinowski), United States Trotting Association Establishment of a threshold for the detection of exogenous cobalt administration in race horses. \$40,000**

**2013 - Principal Investigator, Arkion Life Sciences, LLC. Horse Palatability, \$14,871.**

**2013 -2014 - Principal Investigator, Equine Sports Medicine Consultants, LLC Dose Selection of E4021 for Strenuously Exercising Equine using a Treadmill \$301,531.**

**2012 - 2013 - Principal Investigator (K.H. McKeever and S. Arent), Farnam Companies Inc. dba Central Life Sciences Pharmacokinetics and pharmacodynamics of an oral superoxide dismutase supplement as a recovery aid for horses following strenuous exercise. \$75,417.**

**2012-2013 - Co-Principal Investigator (R.Avenatti, K.H. McKeever and K Malinowski) Equine Science Center Grant Effects of age and Acute Exercise on Heat Shock Protein 70 and Molecular Mediators of Inflammation and Insulin Sensitivity, \$25,000.**

**2011-2012 - Principal Investigators (K.H. McKeever and S. Campbell), Chromologic/Department of Defense. Evaluation of OCHYMO Performance in an Equine Hydration Model. \$63,603.** Validation of a non-invasive transocular device for the measurement of aqueous humor and plasma osmolality in horses and humans subjected to exercise induced manipulations of fluid and electrolyte status.

**2008 - 2010 - Principal Investigator (McKeever, Liburt, Malinowski) Effects of age and training on the cytokine, myokine, and endocrine regulation of glucose metabolism in Standardbred mares, NJAES-Special Initiative on Equine \$80,000.**

**2007 - Principal Investigator (McKeever) Effect of various flavor enhancers on the palatability of Equifit liquid vitamin and mineral supplement, Alpharma, Inc., \$7,500.**

**2006 -2008, Lead Principal Investigator (K.H. McKeever), Managing Principal Investigator (W. Franke), Co-Principal Investigators (N. Vorsa, T Ho, Chan, D. Fong, M. Rafi) W911QY-07-C-0007, Combat ration supplements for improved cognitive and physical performance, US Army Natick Soldier System Center, Natick, MA., Total Costs: \$750,000.**

The main part of this project focused on black tea and cranberry extracts which were shown to suppress the inflammatory response to exercise in horses. The horse was used as an intermediate animal model to conduct dose response trials to determine the effects of the extracts mRNA expression for the cytokines in blood and muscle as well as electron microscopy. The primary hypothesis was that the extracts would suppress markers of delayed onset muscle soreness. The horse was also used to conduct pharmacokinetic studies to determine the distribution and metabolism of the polyflavonols contained in the extracts.

**2006 - Principal Investigator (McKeever) Palatability of an electrolyte and yeast extract supplement, Alpharma, Inc., \$5,000.**

**2006 - Principal Investigator (McKeever) Evaluation of the cooling efficacy of a second generation "Extend-a-Cool" transdermal cooling system. Alpharma, Inc., \$1,500.**

**2006 - Principal Investigator (McKeever) Horse usage for normal blood samples for assays related to Equiox project. Merial Pharmaceutical, Ltd, \$2,000.**

**2002-2005, Co-Principal Investigator (Rosen, Franke, McKeever, Ho, Fong, Chan, Rafi, Huang, Ghai) "Combat ration supplements for improved cognitive and physical performance." US Army Natick Soldier System Center, Natick, MA. DAAD 16-02-C-05 and DAAD 16-03-C055. Contract Total Costs for yrs 2-3: \$619,890, McKeever subcontract total costs: \$141,333.**

The first year of this project used cell cultures and a rat ear inflammation model to show that a dozen food extracts were efficacious in suppressing inflammation. McKeever was responsible for convincing the Army that the horse was an excellent animal model for performance studies rather than using rats. The equine performance studies were key to attracting funding in yrs 2-3.

**2005 - Principal Investigators: (Bagnell, McKeever, Williams) Inflammation in horses and cytokine assay development, NJAES-Special Initiative on Equine \$79,000.**

**2003 - Principal Investigators (Gordon and McKeever) The effects of exercise and ghrelin administration on food intake and endocrine parameters of energy homeostasis in Standardbred mares NJAES-Special Initiative on Equine \$40,000.**

**2003 - Principal Investigators (Watford, Manso, McKeever) Regulation of fuel homeostasis in the horse during pregnancy, lactation and development, NJAES-Special Initiative on Equine. \$10,000.**

**2002 - Principal Investigator (Malinowski, McKeever, Gordon) Care of the Aging Equine Athlete. Bernice Barbour Foundation. \$6,400.**

**2002 - Principal Investigators (McKeever and Lorimer) Do artificial oxygen carriers enhance performance and can we detect their use in horses? NJAES-Special Initiative on Equine. \$40,000.**

**2002 - Principal Investigators (Watford, Manso, McKeever) Regulation of skeletal muscle glucose metabolism in the horse: effects of development and exercise. NJAES-Special Initiative on Equine. \$43,000.**

**2002 - Principal Investigators (Gordon, Malinowski, and McKeever) The regulation of energy homeostasis in the horse. NJAES-Special Initiative on Equine. \$49,000.**

**2001 - Principal Investigator Effects of acid blocking therapies on plasma tCO<sub>2</sub> concentration and markers of performance in Standardbred horses, NJAES-Special Initiative on Equine. \$51,000.**

**2000 - Principal Investigator (McKeever, Malinowski) Do electrolyte supplements alter plasma TCO<sub>2</sub> concentrations in Standardbred horses? NJAES-Special Initiative on Equine. \$59,000.**

**2000 -Co-Principal Investigator (Malinowski, McKeever) Effect of age on the glucose insulin response to exercise in Standardbred mares. NJAES-Special Initiative on Equine. \$36,000.**

**2000-Principal Investigator (McKeever, Lorimer, Cook) An Equine specific transferrin receptor assay. Association of Racing Commissioners International, \$22,400.**

**1999 - Principal Investigator (McKeever, Kearns, Malinowski) Does clenbuterol treatment alter muscle performance and aerobic capacity in the horse. NJAES-Special Initiative on Equine. \$55,000.**

**1999 - Co-Principal Investigator (Malinowski, Boyadjieva, Guirnalda, McKeever) Effect of exercise training and clenbuterol on immune function in the horse. NJAES-Special Initiative on Equine. \$55,000.**

- 1999 - Principal Investigator (McKeever)** *Development of a new model for inducing arthritis.* Merck Research Labs, \$20,000.
- 1998 - Principal Investigator: (McKeever)** *Does enalapril alter pulmonary artery pressure and performance? A possible new treatment for EIPH.* NJAES-Special Initiative on Equine. \$30,000.
- 1997 - Principal Investigator: (McKeever and Lorimer)** *Methods to detect prior rhuEPO use.* Association of Racing Commissioners International. \$25,500.
- 1996 - Principal Investigator: (McKeever)** *Development of methods to detect prior EPO use.* NJAES-Special Initiative on Equine. \$33,000.
- 1996 - Principal Investigator: (McKeever)** *Methods to detect prior EPO use.* Earle I. Mack Charitable Trust. \$3,500.
- 1996 - Principal Investigator: (McKeever)** *Development of methods to detect prior EPO use.* New York Thoroughbred Horseman's Association. \$10,000.
- 1996 - Principal Investigator: (McKeever)** *Measures of exercise performance in geriatric mares undergoing chronic treatment with equine somatotropin (eST)* Bresagen, Inc.. \$6,400.
- 1995 - Principal Investigator: (McKeever)** *Erythropoietin dying to win? Effects on maximal aerobic capacity, blood pressure, and cardiovascular function.* NJAES-Special Initiative on Equine. \$16,000.
- 1995 - Principal Investigator: (McKeever)** *Erythropoietin dying to win? Effects on maximal aerobic capacity, blood pressure, and cardiovascular function.* Rutgers Research Council, \$800.
- 1995 - Principal Investigator: (McKeever)** *Endothelin response to exercise in young and geriatric female horses.* ORSP-Busch Biomedical Research Program, \$8,940.
- 1995-1998 - Principal Investigator (McKeever).** Start-up funding came from the New Jersey State Equine Initiative at approximately \$140,000/yr for four years (1995-1998). Funding provided to develop the Rutgers Equine Exercise Physiology Laboratory.
- 1993 - Principal Investigator: (McKeever, Hinchcliff, Robertson)** *Effect of oral erythropoietin on blood volume in horses.* Amarillo Cell Culture, Inc. \$3,200.
- 1993 - Co-Principal Investigator: (Beard, Holcombe, McKeever, Hinchcliff)** *Effect of Staphylectomy on airflow mechanics in horses.* Ohio Standardbred & Thoroughbred Research Fund. \$15,124.
- 1992 - Co-Principal Investigator: (Hamlin, Bonagura, McKeever)** *Effect of an atriopeptidase inhibitor on the neuroendocrine control of cardiovascular function in dogs with heart failure.* Source: Bayer Pharmaceutical Company. Direct costs: 1st year \$250,000.
- 1992 - Co-Principal Investigator: (McKeever/Hinchcliff, Farris, Lamb)** *Serotonin & hormonal responses to prolonged exercise: effect of glucose infusion.* Ohio Standardbred and Thoroughbred Funds. \$19,681.
- 1992 - Co-Investigator: (Hamlin, Bonagura, McKeever)** *Clinical trial to prove efficacy of Enalapril to improve exercise tolerance in dogs with heart failure.* Merck, Inc., \$70,000.
- 1992 - Co-Principal Investigator: (Lombardo/McKeever, Heck, Whitehead, Auge, Hinchcliff, Alway)** *Anabolic steroids and anaerobic training.* Department of Family Medicine Funds, \$12,000.
- 1991 - Principal Investigator: (McKeever, McNally, Hinchcliff, Reed, Robertson)** *Effect of erythropoietin on maximal aerobic capacity.* Ohio Standardbred & Thoroughbred Funds. \$13,400.
- 1990 - Principal Investigator, (McKeever)** *Hemodynamics, atrial natriuretic peptide, and vasopressin in intact and splenectomized horses during exercise,* University Seed Grant, \$15,000.
- 1990 - Principal Investigator, (McKeever)** *Development Fund Grant, Columbus Instruments,* \$1,000.
- 1990 - Principal Investigator (McKeever)** *Plasma atrial natriuretic peptide concentration in monkeys and horses.* National Aeronautics and Space Administration. NASA RTOP199-14-12-11, \$2,200.
- 1989 - Principal Investigator: (McKeever, Hinchcliff, Reed, Lamb, Muir)** *Endocrine changes during exercise in horses.* Ohio Animal Health Trust, \$4,996.
- 1989 - Principal Investigator: (McKeever, Hinchcliff, Reed, Lamb, Muir)** *Hormonal changes and exercise in the horse.* Ohio Standardbred and Ohio Thoroughbred Research Funds, \$2,117.

**1989 - Principal Investigator: (McKeever, et al.)** *Hematocrit and plasma volume alterations during submaximal exercise in intact and splenectomized horses*, Ohio Standardbred and Ohio Thoroughbred Research Funds, **\$9,560.**

**1989 - Principal Investigator, (McKeever)** *Validation of Equine Heart Rate Meters*. Exercise Physiology Development Fund Grant from Mr. and Mrs. Myron Stepath, **\$1,000.**

**1988 - Principal Investigator: (McKeever)** *Cardiovascular, fluid, electrolyte, & endocrine responses to the first week of exercise training in horses*. Central Ohio Heart Assn Young Investigator Award **\$25,000.**

**1985-1987 - Co-Principal Investigator (Sandler and McKeever)** *Cardiovascular responses to simulated weightlessness in non-human primates*. NASA RTOP #199-21-12-01. **\$380,000.**

Grant funded Dr. McKeever's research as a National Research Council Resident Research Associate.

### **Grants and Contracts Funded - Co-Investigator:**

**1996 - Co-Investigator:(Malinowski, Christensen, Hafs, Ralston, McKeever)** *Effects of equine somatotropin in geriatric mares*. Bresagen, Inc. **\$92,500.**

**1993 - Co-Investigator: (Kohn, Hinchcliff, McKeever)** *Effect of ambient temperature and humidity on performance in exercising horses*. American Horse Shows Association. **\$33,039.**

**1993 - Co-Investigator: (Kohn, Hinchcliff, McKeever)** *Effect of total body washing with cool water on heat dissipation in horses exercised at 32.2 °C and 90% humidity*. American Horse Shows Assn **\$5,658.**

**1991 - Co-Investigator: (Beard, Holcombe, McKeever, Hinchcliff)** *Effect of Sternothyroid myectomy on airflow mechanics in normal and clinically affected horses*. Ohio Standardbred and Ohio Thoroughbred Research Fund. **\$15,725.**

**1991 - Co-Investigator (Hinchcliff, McKeever, Muir, Sams)** *Furosemide and phenylbutazone in performance horses: drug interactions & effects on performance*. Grayson Foundation. **\$150,000.**

**1991 - Co-Investigator: (Hinchcliff, McKeever, Reinhardt)** *Energy expenditure, water flux, body composition changes during sustained running in sled dogs*. Iams Corp. **\$16,861.**

**1991 - Co-Investigator (Hinchcliff, McKeever, Muir, Sams)** *Does Na<sup>+</sup> bicarbonate improve athletic performance in horses?* Ohio Standardbred & Thoroughbred Research Funds. **\$11,573.**

**1990 - Co-Investigator (Hinchcliff, McKeever, Muir)** *Thermoregulatory Responses to Running: Effect of Furosemide*. Ohio Standardbred and Ohio Thoroughbred Research Funds. **\$12,624.**

**1990 - Co-Investigator: (Kohn, Fenger, Hinchcliff, McKeever)** *Relationship between O<sub>2</sub> consumption & Hb saturation*. Ohio Standardbred and Thoroughbred Research Funds. **\$7,880.**

**1989 - Co-Investigator: (Cooley, McKeever, Lamb, Hinchcliff, Muir)** *Furosemide and exercise: Hormonal response in the horse*. Ohio Standardbred and Thoroughbred Research Fund. **\$2,913.**

**1989 - Co-Investigator: (Hinchcliff, Muir, McKeever)** *Furosemide and exercise: Renal and extra-renal effects in exercising horses*. Ohio Standardbred and Thoroughbred Research Funds. **\$11,841.**

**1988 - Co-Investigator: (Bramlage, Schneider, Hardy, Weisbrode, McKeever)** *Effects of exercise on articular cartilage repair in the horse*. American Quarter Horse Association. **\$16,500.**

**1988 - Co-Investigator: (Hinchcliff, Muir, McKeever)** *Effect of phenylbutazone on selected physiological and biochemical responses to exertion*. Ohio Standardbred & Thoroughbred Research Fund **\$14,900.**

### **Equipment and Other Gifts**

**New Jersey Racing Commission: (Malinowski and McKeever)** Donation of Equipment and supplies from the closed NJ State Police Equine Drug Detection Laboratory \$206,606.

**Merial Pharmaceutical, Ltd** Donation of Gastrogard valued at \$8,000

**Merial Pharmaceutical, Ltd** Donation of Enalapril valued at \$2,000

**Ortho Biotech** donated a new hemostasis analyzer valued at \$30,000.

**Merck, Inc.** laboratory instruments (gamma counter, chart recorders, balances, infusion pumps, refrigerated centrifuge, spectrophotometer, HP plotters, microplate reader, laser flow meter, etc.) value of \$75,000

**Ortho-McNeal** donated several laboratory instruments (2 eight channel Gould chart recorders, 2 Buxco hemodynamic analyzers, 2 flow meters, HP plotter, etc.) with an estimated value of \$65,000

**Ohmeda, Inc. (British Oxygen Corp.)** donated several lab instruments (two hot plate/stirrers, 1 new 4 channel Grass chart recorder with several physiological transducers, 1 Buxco hemodynamic analyzer, 1 vortex, new set of Eppendorf pipettes and stand, etc.) with an estimated value of \$45,000

**Horse owners** donated 14 mares to the Exercise Physiology program.

## **Publications:**

### **Books:**

1. **Hodgson D, McKeever, K.H. and C. McGowan** The Athletic Horse, Principles and Practice of Equine Sports Medicine, 2<sup>nd</sup> Edition, Elsevier, St. Louis, 2013.

### **Book Chapters:**

1. **Jose-Cunilleras, E. and McKeever, K.H.** Body fluids and electrolytes: responses to exercise and training. *Equine Sports Medicine and Surgery: Basic and Clinical Sciences of the Equine Athlete Second Edition*. Eds: K. Hinchcliff, A. Kaneps, R. Geor, Elsevier, Philadelphia, Section 2, Chapter 38, pp. 837-854, 2014.
2. **McKeever, K.H. and R.A. Lehnhard** Physiology of acid base balance and fluid shifts with exercise. *In: The Athletic Horse, Principles and Practice of Equine Sports Medicine, 2<sup>nd</sup> Edition*, Eds. D.R. Hodgson, K.H. McKeever, and C.T. McGowan, Elsevier, St. Louis, Section II, Chapters 6, pp. 69-87, 2014.
3. **McKeever, K.H., P. Davitt, and S. Arent.** Hormonal responses to exercise and training. *In: The Athletic Horse, Principles and Practice of Equine Sports Medicine, 2<sup>nd</sup> Edition*, Eds. D.R. Hodgson, K.H. McKeever, and C.T. McGowan, Elsevier, St. Louis, Section II, Chapters 7, pp. 88-107, 2014.
4. **McKeever, K.H. and R.A. Lehnhard.** Age and disuse in Athletes: Effects of detraining, spelling, injury, and aging. *In: The Athletic Horse, Principles and Practice of Equine Sports Medicine, 2<sup>nd</sup> Edition*, Eds. D.R. Hodgson, K.H. McKeever, and C.T. McGowan, Elsevier, St. Louis, Section II, Chapters 12, pp. 243-252, 2014.
5. **McKeever, K.H.** Feed Supplements to Maintain Performance and Health, *In: Applied Equine Nutrition and Training – ENUTRACO 2011*, Ed: Arno Lindner, Wageningen Academic Press, Wageningen, Netherlands, pp. 179-191, 2011.
6. **McKeever, K.H.** Endocrine alterations in the equine athlete: an update. *Veterinary Clinics of North America, Equine Practice, Endocrine Diseases*, ed. Ramiro Toribio. Elsevier, Philadelphia, Vol. 27:197-218, 2011.
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9. **McKeever, K.H.** Aging and how it affects the response to exercise in the horse. *In: Equine Geriatric Medicine and Surgery*, Ed: J. Bertone, Elsevier, Philadelphia, pp. 69-78, 2005.
10. **McKeever, K.H.** Does it Work? Testing the efficacy of feed supplements *In: Advances in Equine Nutrition III* Ed. Joseph D. Pagan. Nottingham University Press, Nottingham UK, pp. 65-68, 2005.
11. **McKeever, K.H.** Can feed cause a positive blood test in racehorses? *In: Advances in Equine Nutrition III* Ed. Joseph D. Pagan. Nottingham University Press, Nottingham UK, pp. 68-76, 2005

12. **McKeever, K.H.** Body fluids and electrolytes: responses to exercise and training. *Equine Sports Medicine and Surgery: Basic and Clinical Sciences of the Equine Athlete* Eds: K. Hinchcliff, A. Kaneps, R. Geor, Elsevier, Philadelphia, Chpt. 38, p. 853-871, 2004.
13. **McKeever, K.H. and M.E. Gordon** Endocrine alterations in the equine athlete. *Equine Sports Medicine and Surgery: Basic and Clinical Sciences of the Equine Athlete* Eds: K. Hinchcliff, A. Kaneps, R. Geor, Elsevier, Philadelphia, Chpt. 35, pp. 793-814, 2004
14. **McKeever, K.H.** Exercise physiology of the older horse. In: *Veterinary Clinics of North America: Equine Practice; Geriatrics*, ed. J.M. MacLeay, Saunders, Philadelphia, Vol. 18:469-490, 2002.
15. **McKeever, K.H.** The endocrine system and the challenge of exercise. In: *Veterinary Clinics of North America: Equine Practice; Equine Endocrinology*, eds Messer, N.T. and P.J. Johnson. Saunders, Philadelphia, Vol. 18:321-354, 2002.
16. **McKeever, K.H.** Effect of exercise on fluid balance and renal function in horses. In: *Veterinary Clinics of North America: Equine Practice; Fluids, Electrolytes and Thermoregulation in Horses*, ed. K.W. Hinchcliff. Vol. 14: 23-44, 1998.
17. **McKeever, K.H.** Electrolyte and water balance in the exercising horse, In: *Nutrition Manual for Veterinarians*. American Association of Equine Practitioners and Purina Mills, Inc., St. Louis, Mo. Chapter 10, pp. 79-86, 1997.
18. **McKeever, K.H.**, Water and electrolytes and the prevention of thermal injuries. *Horse Industry Handbook*, American Youth Horse Council, Lexington, Chpt. 8, pp 861-863, 1994.
19. **McKeever, K.H.** Sympatholytic and Sympathomimetics. In: *Veterinary Clinics of North America: Equine Practice; Drug use in Performance Horses*, eds. K. Hinchcliff & R. Sams. Saunders, Philadelphia, Vol. 9, pp 635-647, 1993.

## **Journal Articles:**

### **Published, in Press, and Submitted:**

20. **Gordon, M.E., D.L. Thompson, and K.H. McKeever.** Effect of exogenous ghrelin infusion on feed intake and metabolic parameters of energy homeostasis in Standardbred mares. *Comparative Exercise Physiology* 10: 113-122, 2014.
  21. **Drake S.D., L.E. Hansen, C. Harris, W.C. Lewis, E. Miller, B. Moranville, M. Blyzka, W.G. Bergen, K.H. McKeever, G.J. Hausman, and M.V. Dodson.** Effects of clenbuterol on horses. *Comparative Exercise Physiology* 9:181-187, 2013.
  22. **Liburt, N.R., K. McKeever, D. Smarsh, K. Malinowski, R. Geor.** The hypothalamic-pituitary- adrenal axis response to stimulation tests before and after exercise training in old vs. young standardbred mares. *Journal of Animal Science* 91: 5208-5219, 2013.
  23. **Norton, R.P., Lehnhard, RA, Kearns, C.F., McKeever, K.H.** Ephedra-induced alterations in cardiovascular function and thermoregulation during acute exercise in horses. *Comparative Exercise Physiology* 9:109-117, 2013.
  24. **Betros, C.L., N.M. McKeever, K. Malinowski, H.C. Manso, K.H. McKeever.** Effects of aging and training on resting and intrinsic heart rate in horses. *Comparative Exercise Physiol.* 9:43-50, 2013.
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25. **Liburt, N.R., M.N. Fugaro, E K. Wunderlich, J. L. Zambito, D.W. Horohov, A. Betancourt, Raymond C. Boston, Raymond Geor, K.H. McKeever.** The effect of age and exercise training on insulin sensitivity, fat and muscle tissue cytokine profiles and body composition of old and young Standardbred mares . *Comparative Exercise Physiol.* 8:173-187, 2012.
  26. **Baldassari, J., W.C. Franke, D.W. Horohov, A. Betancourt, and K.H. McKeever** Effects of quercetin on exercise potential and exercise-induced cytokines in the horse *Comparative Exercise Physiol.* 8:131-142, 2012.

27. **Watson, P, R.A. Lehnhard, S. Butterfield, and K.H. McKeever**, The metabolic cost to treadmill graded exercise: traditional vs. underwater. *Comparative Exercise Physiol.* 8:11-17, 2012.
28. **Manso, H.C. Filho, H.E. Manso, K.H. McKeever, S.R. Duarte, J.M.G. Abreu**, Heart rate of of two breeds of four gaited horses to a simulated field gaited test *Comparative Exercise Physiol.* 8:41-46, 2012.

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29. **McKeever, K.H., S.M. Wickler, T. Smith, D.C. Poole** Altitude not exercise increases plasma erythropoietin in equids. *Comparative Exercise Physiology* 7: 193-199, 2011.
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32. **Lehnhard, R.A., M. Barlett, B. Roche, K.W. Hinchcliff, and K.H. McKeever**. Variations in lactate during a graded maximal exercise test due to sampling location and method. *Comparative Exercise Physiology* 7: 81-87, 2011.

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35. **Liburt, N.R., A. Adams, A. Betancourt, D.W. Horohov, and K.H. McKeever**. Exercise-induced increases in cytokine markers of inflammation in muscle and blood in horses. *Equine Veterinary Journal*, 42 (S38) 280-288, 2010.
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38. **Balaskonis, V, A. Szucsik, R.A. Lehnhard, and K.H. McKeever** Effect of pelleted dietary supplements on plasma tCO<sub>2</sub> concentration in Standardbred horses. *Comparative Exercise Physiology* 7:43-48, 2010.
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40. **Caltibilota, T.J., J.G. Milizio, S.R. Malone, J. Kenney, and K.H. McKeever**. Effect of Sucralfate® on plasma total carbon dioxide concentration in horses subjected to a simulated race test. *The Veterinary Journal*, 183: 191-195, 2010.

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42. **Liburt, N.R., K.H. McKeever, J.M. Streltsova, W.C. Franke, M.E. Gordon, H.C. Manso, Filho, D.W. Horohov, R.T. Rosen, C.T. Ho, A.P. Singh, N. Vorsa**. Effects of cranberry and ginger on the physiological response to exercise and markers of inflammation following acute exercise in horses. *Comparative Exercise Physiology.* 6:157-169, 2009.

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45. **Ciolino, D., Lehnhard R.A., and McKeever, K.H.** Effect of Gastrogard on plasma tCO<sub>2</sub> concentration in Standardbred horses. *Comparative Exercise Physiology*. 6:81-87, 2009.
46. **Kearns, C.F. and K.H. McKeever.** Clenbuterol and the horse revisited. *The Veterinary Journal*, 182:384-391, 2009.
47. **Manso, H.C., K.H. McKeever M.E. Gordon, H.E. Manso, W.S. Lagakos, G. Wu, M. Watford.** Developmental changes in the concentrations of glutamine and other amino acids in plasma and skeletal muscle of the Standardbred foal. *Journal of Animal Science*, 87:2528-2535, 2009.
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49. **Lehnhard, R.A., H.C. Manso, Filho,, R. Causey, M. Watford, and K.H. McKeever.** Maternal and fetal heart rates during exercise in horses. *Comparative Exercise Physiology* 6:43-48, 2009.

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6. **Arent, S.M., A. Walker, K.H. McKeever.** Maximal aerobic capacity in horses: a retrospective study to identify the age-related breakpoint *Medicine and Science in Sport and Exercise* 42:511, 2010.

7. **Arent, S.M., J. Pellegrino, M. Senso, K.H. McKeever.** Black tea extract reduces DOMS, oxidative stress, and cortisol responses to high-intensity interval training. *Medicine and Science in Sport and Exercise* 40:S244, 2007.
8. **Arent, S.M., J. Pellegrino, K.H. McKeever, M. Epstein, M. Senso, D. Freidenreich, C.A. Williams, R. Monaco.** The impact of nutritional supplementation on performance and muscle breakdown in collegiate soccer players nutritional supplementation, body composition, performance, and hormonal responses in division I college football players. *Medicine and Science in Sport and Exercise* 39:S361, 2007.
9. **Manso, H.C., C.L. Betros, M.E. Gordon, H. Costa, M. Watford, K.H. McKeever.** Changes in plasma and muscle glutamine concentration in horses with aging and exercise training. *The Physiologist* 47:322, 2004.
10. **Gordon, M.E., C.L. Betros, H.C. Manso Filho, and K.H. McKeever.** Plasma leptin, ghrelin, and adiponectin concentrations in fit vs. unfit Standardbred mares. *Medicine and Science in Sport and Exercise* 36:S303, 2004.
11. **McKeever, K.H., M.E. Gordon, C.L. Betros, and H.C. Manso Filho** Exercise-Induced alterations in plasma insulin, cortisol, leptin, and ghrelin concentrations in horses. *Medicine and Science in Sport and Exercise* 36:S139-S140, 2004.
12. **Manso Filho, H.C., R. Causey, R.A. Lehnhard, and K.H. McKeever.** Maternal and fetal heart rates during exercise in horses. *Medicine and Science in Sport and Exercise* 36:S211, 2004.
13. **Kearns, C.F., T. Abe 2, H.C. Manso, Y. Sato, M. Sleeper, K.H. McKeever.** Increases in skeletal muscle size following moderate vascular occlusion in Standardbred horses. *Medicine and Science in Sport and Exercise* 36:S343, 2004.
14. **Manso Filho, H.C., M. Watford, and K.H. McKeever.** Body composition in transition mares and suckling foals. *2nd European Workshop on Equine Nutrition, 2003.*
15. **McKeever, K., R. Norton, C. Kearns, C. Betros, M. Gordon, H. Manso.** Effect of Ma Huang on Cardiovascular Function and Exercise Performance in Horses. *Medicine and Science in Sport and Exercise.* 35:S267, 2003.
16. **McKeever, K.H., A.M. Szucsik, M.B. Balaskonis, C.L. Betros, C.F. Kearns, K. Malinowski.** Effect of management practices and training on plasma tCO<sub>2</sub> concentration in horses *Journal of Animal Science* 80 (Suppl 1): 172, 2002.
17. **Malinowski, K., E. Shock, V. Roegner, P. Rochelle, C. Kearns, P. Guirnalda, K. McKeever.** Age and exercise training alter plasma  $\beta$ -endorphin, cortisol, and immune parameters in horses. *Journal of Animal Science* 80 (Suppl.1): 156, 2002.
18. **Beekley, M.D., K. McKeever, J. M. Ideus, J. B. Brown, C. Kearns.** Chronic clenbuterol administration alters myosin heavy chain composition in Standardbred mares. *Medicine and Science in Sport and Exercise* 33:S:339, 2001.
19. **McKeever, K. H. and C.F. Kearns.** Aging-induced alterations in plasma volume in horses. *Medicine and Science in Sport and Exercise* 33:S:257, 2001.
20. **Struck, M.B., K.H. McKeever, C.F. Kearns, K. Malinowski** Therapeutic levels of clenbuterol act as a repartitioning agent in the Standardbred mare. *Medicine and Science in Sport and Exercise.* 33:S338, 2001.
21. **Kearns, C.F. and K. H. McKeever.** Long-term clenbuterol administration decreases aerobic performance in Standardbred mares. *Medicine and Science in Sport and Exercise* 33:S:338, 2001.
22. **Plant D.R., C.F. Kearns, K.H. McKeever, G.S. Lynch.** Short-term clenbuterol treatment does not affect Ca<sup>2+</sup>-sensitivity of fast skeletal muscle fibers from horses. *Medicine and Science in Sport and Exercise* 33:S:172, 2001.
23. **Lehnhard, R.A., K.H. McKeever, C. F. Kearns, J. M. Ideus, J. B. Brown, M.D. Beekley.** Myosin heavy chain is different in old versus young Standardbred mares. *Medicine and Science in Sport and Exercise* 32:S13, 2001.
24. **Sleeper M, K. McKeever C. Kearns.** Chronic clenbuterol administration negatively alters cardiac function in the Standardbred mare. *Journal of the American College of Veterinary Internal Medicine* 15:321, 2001.

25. **McKeever, K.H., S. Geiser and C.F. Kearns.** Role of the renin-angiotensin aldosterone cascade in the pulmonary artery pressure response to exercise in horses. *The Physiologist* 43:356, 2000.
26. **Kearns, C., K. McKeever, K. Kumagai, T. Abe,** Using body composition as a predictive measure of elite Standardbred performance, 5<sup>th</sup> *Conference of Researchers in Equine Exercise Physiology*, New Brunswick, NJ, 5:3, Sept, 2000.
27. **McKeever, K.H., T.L. Eaton, S. Geiser, and C.F. Kearns** Thermoregulation in old and young horses during exercise. *Medicine and Science in Sport and Exercise* 32:S156, 2000.
28. **Kearns, C.F., K. McKeever, K. Kumagai, T. Abe.** Using body composition as a predictive measure of elite Standardbred performance. *Medicine and Science in Sport Exercise* 32:S357, 2000.
29. **Eaton, T.L. K.H. McKeever, S. Geiser, and C.F. Kearns** Thermoregulation in old and young mares during exercise. 4<sup>th</sup> *Conference on Research in Equine Exercise Physiology*, Pomona, CA, 1999.
30. **McKeever, K.H., L.C. Keil, H. Sandler.** Extracardiac sensing mechanisms associated with induced fluid shifts. The 4<sup>th</sup> *International Head-out Water Immersion Symposium*, Graz, Austria, Sept., 1999.
31. **McKeever, K.H., R. Scali, S. Geiser, J.M. Agans, P.D. Guirnalda, C.F. Kearns, A.N. Dimock.** Training-induced alterations in renal function in horses. *Medicine and Science in Sport and Exercise*. 31:S323, 1999.
32. **McKeever, K.H., J.M. Agans, S. Geiser, R. Scali, P.D. Guirnalda, C.F. Kearns, P.J. Lorimer.** Recombinant human erythropoietin administration alters red cell volume and aerobic capacity in Standardbred horses, 3<sup>rd</sup> *Conference of Researchers in Equine Exercise Physiology*, Pullman, 1998.
33. **McKeever, K.H. and L.A. Antas.** Endothelin response to exercise in horses. *Medicine and Science in Sport and Exercise* 30:S105, June 1998.
34. **Smith, T., W. Beam, S. Wickler, K.H. McKeever.** Altitude not exercise increases plasma erythropoietin in the horse *Federation of American Societies of Experimental Biology Journal* 12:A724, 1998.
35. **McKeever, K.H., K. Malinowski, R.A. Christensen, H.D. Hafs.** Chronic somatotropin (eST) administration does not affect aerobic capacity or indices of exercise performance in geriatric mares. *Journal Animal Science* 75 (Suppl. 1):217, 1997.
36. **Hinchcliff, K.W. and K.H. McKeever.** Fluid replenishment abolishes the effect of furosemide in running horses. Furosemide. *Abstracts of the 1997 American College of Veterinary Internal Medicine National Meeting*.
37. **McKeever, K.H. and K. Malinowski.** Exercise capacity in young and geriatric female horses. *Abstracts of the 2<sup>nd</sup> Conf of Researchers in Equine Exercise Physiology*, Columbus, OH, 1996.
38. **McKeever, K.H.** Erythropoietin: a new form of blood doping in horses. *Handbook and Abstracts of the 11th International Conference of Racing Analysts and Veterinarians*, Brisbane, Australia, 1996.
39. **Hinchcliff, K.W., K.H. McKeever, W. Muir, R. Sams.** Furosemide reduces accumulated oxygen deficit and rate of lactate production in horses during brief intense exertion. *Handbook and Abstracts of the 11th International Conference of Racing Analysts and Veterinarians*, Brisbane, Australia, 1996.
40. **Farris, J.W. , K.W. Hinchcliff, K.H. McKeever, D.R. Lamb.** Treadmill endurance of Standardbred horses with tryptophan or glucose. *Medicine and Science in Sport and Exercise* 27: S48, 1996.
41. **McKeever, K.H.** Workshop on methods for the measurement of fluid and electrolyte alterations during exercise in horses. *Abstracts of the 4th International Conference on Equine Exercise Physiology, 1994*.
42. **McKeever, K., K. Hinchcliff, J. Farris, S. Alway, L. Schmall, R. Heck, J. Lombardo.** Arterial and intracardiac pressure during progressive resistance exercise in ponies. *Medicine and Science in Sport and Exercise*. 26:S5, 1994.
43. **McKeever, K.H., B.A. McNally, K.M. Kirby, J. Farris K. Hinchcliff.** Effect of erythropoietin on plasma and red cell volume,  $VO_{2MAX}$ , and hemodynamics in exercising horses. *Medicine and Science in Sports Exercise* 25:S25, 1993.
44. **Rivas L.J., K.W. Hinchcliff, K.H. McKeever.** Furosemide-induced reduction in right atrial pressure is related to blood volume depletion. *74th Conference of Research Workers in Animal Disease*, 1993.

45. **Hinchcliff, K.W., K.H. McKeever, W. Muir, R. Sams.** Phenylbutazone attenuates the diuretic effects of furosemide in horses. *74th Conference of Research Workers in Animal Disease*, 1993.
46. **Hinchcliff, K.W., K.H. McKeever, W. Muir, R.A. Sams.** Effect of oral sodium loading on acid:base status and athletic capacity of horses. *Medicine and Science in Sports and Exercise* 25:S25, 1993.
47. **Fenger, C.K., K.W. Hinchcliff, K.H. McKeever, C.W. Kohn, and W.W. Muir.** Arteriovenous differences in electrolyte, albumin, respiratory gases, and hemoglobin saturation with maximal exercise in horses. *73th Conference of Research Workers in Animal Disease*, 1992
48. **Fenger, C. K., K.W. Hinchcliff, K.H. McKeever, C. W. Kohn.** Changes in electrolytes, lactate, and hemodynamics with exercise in horses. *Abstracts of the 1992 American College of Veterinary Internal Medicine National Meeting (Dr. C. Fenger was McKeever's graduate student and received the 1st place prize in graduate student competition for this presentation)*
49. **Hinchcliff, K.W., K.H. McKeever, W. Muir, R. Sams.** Effect of oral Na<sup>+</sup> bicarbonate on indices of athletic performance in horses. *72th Conf. of Research Workers in Animal Disease*, p. 30, 1991.
50. **Hardy, J., L. Bramlage, R. Schneider, S. Weisbrode, K. McKeever.** Effects of exercise on articular cartilage repair in the horse. *American College of Veterinary Surgeons Annual Mtg*, 1991.
51. **McKeever, K.H., K.W. Hinchcliff, J.L. Cooley.** Acute volume load during exercise in horses: atrial natriuretic peptide, vasopressin, and hemodynamics. *Medicine and Science in Sport and Exercise* 23:S104, 1991.
52. **Gerken, D.F., R.A. Sams, K.H. McKeever, K.W. Hinchcliff, S. Ashcraft.** Urinary pH effects on the renal clearance of lidocaine and phenylbutazone in exercising horses. *Toxicologist* 11:96, 1991.
53. **Cooley, J.L., K.H. McKeever, K.W. Hinchcliff, D.R. Lamb, W.W. Muir.** Furosemide: hormonal alterations in exercising horses. *71st Conference of Research Workers in Animal Disease*, 1990.
54. **McKeever, K.H., K.W. Hinchcliff, L.M. Schmall, W. Muir.** Renal function and atrial natriuretic peptide in horses during submaximal exercise. *Medicine and Science in Sports and Exercise*, 22:S25, 1990.
55. **Hinchcliff, K.W., K.H. McKeever, L.M. Schmall, C.W. Kohn, and W.W. Muir.** Central and renal hemodynamic responses to prolonged submaximal exertion in horses. *Abstracts of the 70th Conference of Research Workers in Animal Disease*, 1989
56. **McKeever, K.H., K.W. Hinchcliff, G. Kociba, S.M. Reed, W. Muir.** Coagulation and fibrinolysis in horses during exercise. *Medicine and Science in Sport and Exercise* 21: S105, 1989.
57. **Hinchcliff, K.W., K.H. McKeever, G. Kociba, S. Reed, W. Muir.** Exercise-induced changes in coagulation and fibrinolysis in horses. *69th Conf. of Research Workers in Animal Disease*, 1988.
58. **McKeever, K.H., S.H. Jarrett, W.A. Schurg, and V.A. Convertino.** Exercise training-induced hypervolemia in the horse. *Association for Equine Sports Medicine Quarterly* 2:13, 1987.
59. **McKeever, K.H., S.H. Jarrett, W.A. Schurg, and V.A. Convertino.** Resting concentrations of the plasma free amino acids following chronic submaximal exercise training in horses. *Association for Equine Sports Medicine Quarterly* 1:72, 1986.
60. **Jarrett, S.H., K.H. McKeever, W.A. Schurg.** Nitrogenous constituents in the blood of foals weaned at varying ages. *Abstracts of the Annual Meeting American Society of Animal Science*, 1985.
61. **McKeever, K. and W. Schurg.** Exercise training-induced hypervolemia in greyhound dogs: the role of water intake, urine output, GFR, osmolar clearance, and free water clearance. *Abstracts of the 1984 American Society of Animal Science Meeting*.

### **Other Publications:**

1. **McKeever, K.H. and D. Marlin** Forward. *Comparative Exercise Physiology* **10**:1, 2014.
2. **McKeever, K.H. and D. Marlin** Forward. *Comparative Exercise Physiology* **9**:1, 2013.
3. **McKeever, K.H. and D. Marlin** Forward. *Comparative Exercise Physiology* **8**:1, 2012.
4. **McKeever, K.H., L.C. Keil, and H. Sandler.** Intrapericardial denervation: responses to water immersion in rhesus monkeys. NASA - Technical Memorandum: 111729, 1995.

5. **McKeever, K.H.** NJ Department of Agriculture Equine Horse Health Newsletter. Age alters cooling ability in horses during exercise. page 4, 2000.
6. **McKeever, K.H.** *Erythropoietin* NJ Department of Agriculture Equine Horse Health Newsletter. p3, 1998.
7. **McKeever, K.** Equine Exercise Physiology at Ohio State University. *Ohio Thoroughbred Magazine* 17: 62-63, 1987.
8. **McKeever, K.** **Using Your Equine Heart Rate Meter.** *Dressage and Combined Training Magazine.* 25:32-34, 1989.
9. **McKeever, K.H.** Response to Letter to the Editor. *Medicine and Science in Sports and Exercise* 19:524-525, 1987.

### **Patent Application**

McKeever K.H., W. Franke, R. Rosen, S. Rosen, J. Streltsova, N. Liburt, and Welgen, 2005. Compositions and methods for optimizing exercise recovery U.S. Provisional Application No. 60/684,336, originally filed May 24, 2005, 20070042972 Class: 514027000, also listed as RU-111.

### **National and International Invited Presentations and Lectures:**

1. **Invited Lecture:** *Aging, cardiovascular function, and performance in horses.* Faculty of Veterinary Medicine and Animal Science, Swedish University of Agricultural Sciences, Uppsala, Sweden, 2014.
2. **Presenter:** *Hemodynamic and endocrine changes associated with splenic reserve mobilization.* Proceedings 9<sup>th</sup> International Conference on Equine Exercise Physiology, Chester, England, 2014.
3. **Invited Lecture:** *Recent research testing the efficacy of equine feed supplements.* California Animal Nutrition Conference, Fresno, CA, 2014.
4. **Invited Lecture:** *History of the use of the horse in human medicine: an overview of the ways equine research has benefitted both the athletic horse and humans.* Philadelphia Society for the Promoting of Agriculture, November, 2011.
5. **Invited Lecture:** *Feed Supplements to Maintain Performance and Health,* Equine Nutrition and Training Conference, Institute Curie, Paris France, October, 2011.
6. **Invited Lecture:** *Practical News on Performance Diagnosis and Training of Horses Published in Scientific Literature Between 2009-2011.,* Equine Nutrition and Training Conference, Institute Curie, Paris France, 2011.
7. **Presenter** “*Age related decreases in thermoregulation and cardiovascular function in horses*” 8<sup>th</sup> International Conference on Equine Exercise Physiology, Capetown, South Africa, 2010.
8. **Presenter** “*Exercise-induced increases in inflammatory cytokines in muscle and blood of horses*” 8<sup>th</sup> International Conference on Equine Exercise Physiology, Capetown, South Africa, 2010.
9. **Presenter** “*Cariovascular Physiology Past and Present*” 8<sup>th</sup> International Conference on Equine Exercise Physiology, Capetown, South Africa, 2010.
10. **Invited Panelist:** *Performance Enhancing Drugs,* Horses 2009 Educational Conference, Rutgers University, 2009.
11. **Invited Panelist:** *Challenges Facing Harness Racing and Integrity of the Sport,* Horse in Harness Expo, Delaware Valley College, 2009.
12. **Invited Lecture:** *An Update on the Effects of Cranberry Extracts on Inflammatory Cytokines Following Intense Exercise in Horses,* Research and Development Associates for Military Food and Packaging Systems, Colorado Springs, Colorado, 2007.
13. **Invited Panelist** *Evolution of the Racehorse: The Barbaro Story,* Darwin Lecture Series at the Franklin Institute Science Museum, Philadelphia, 2006.

14. **Invited Lecture:** *The Horse as an Animal Model for Conducting Studies of the Effects of Nutraceuticals on Performance*, Research and Development Associates for Military Food and Packaging Systems, Lexington, Kentucky, 2005.
15. **Presenter** "Effects of orange peel and tea extract on markers of performance and cytokine markers of inflammation following acute exercise" 19th Equine Science Society Symposium, Tucson, AZ, 2005.
16. **Invited Panelist** *The Hunt for the Red October: Finding the Undetectables-Presentation of EPO research*, Joint Meeting of Harness Tracks of America, Thoroughbred Racing Association, and Racetracks of Canada, Hollywood, FL, 2003.
17. **Invited Panelist:** *Designer Drugs*, Horses 2003 Educational Conference, Rutgers University, 2003.
18. **Invited Panelist:** *Integrity of Equestrian Sport*, Horses 2003-Horse Industry Summit, Rutgers University, 2003.
19. **Panel Moderator:** *Equine Injuries, Lameness & Treatment Options* (panel) Horses 2003 Educational Conference, Rutgers University, 2003.
20. **Invited Paper:** *Does it Work? Testing the efficacy of feed supplements*, Kentucky Equine Research (KER) Equine Nutrition Conference "Nutrition of the Performance Horse-An International Perspective," Lexington KY, 2002.
21. **Invited Paper:** *Can feed cause a positive blood test in racehorses? Some recent information on the effect of dietary supplements on plasma tCO<sub>2</sub> concentration in horses*, Kentucky Equine Research Nutrition Conference "Nutrition of the Performance Horse-An International Perspective.", 2002.
22. **Presenter:** *Plasma aldosterone concentration and renal sodium excretion are altered during the first days of training in horses*, 6th International Conf. Equine Exercise Physiology, Lexington, KY, 2002.
23. **Presenter:** *Workshop on Exercise-Induced Pulmonary Hemorrhage*, 6th International Conference on Equine Exercise Physiology, Lexington, KY, 2002.
24. **Presenter:** *Workshop on Detection of the Administration of Alkalinizing Agents*, 6th International Conference on Equine Exercise Physiology, Lexington, KY, 2002.
25. **Presenter:** *Effect of management practices and training on plasma tCO<sub>2</sub> concentration in horses"* American Society of Animal Science/Canadian Society of Animal Science International Meeting, Quebec, 2002.
26. **Presenter:** *Aging-induced alterations in plasma volume in horses*, American College of Sports Medicine National Meeting, Baltimore, MD, May, 2001.
27. **Presenter:** *Role of the renin-angiotensin aldosterone cascade in the pulmonary artery pressure response to exercise in horses*, Am. Physiol. Society - Comparative Physiology of Exercise Symp., Portland, ME, 2000.
28. **Organizer and Presenter:** *Wet lab demonstration of cardiopulmonary measurements in exercising horses*, 20<sup>th</sup> Association of Equine Sports Medicine International Meeting, New Brunswick, NJ, 2000.
29. **Organizer and Presenter:** *Wet lab demonstration of Evans Blue Dye and Radioimmunoassay extraction techniques*, 5<sup>th</sup> Conf. of Researchers in Equine Exercise Physiology, New Brunswick, 2000.
30. **Presenter:** *Thermoregulation in old and young horses during exercise*, American College of Sports Medicine National Meeting, Indianapolis, IN, 2000.
31. **Invited Panelist:** *Putting Science into Practice at the Track*, 26<sup>th</sup> Annual Symposium on Racing, University of Arizona Race Track Industry Program, Tucson, AZ, 1999.
32. **Presenter:** *Extracardiac sensing mechanisms associated with induced fluid shifts*. 4<sup>th</sup> International Head-out Water Immersion Symposium, Institute for Adaptive and Spaceflight Physiology, Karl-Franzens-Univ., Graz, Austria, 9/1999.
33. **Presenter:** *Training-induced alterations in renal function in horses*, American College of Sports Medicine National Meeting, Seattle, WA, May, 1999.

34. **Presenter:** *Recombinant human erythropoietin administration alters red cell volume and aerobic capacity in Standardbred horses*, 3<sup>rd</sup> Conference of Researchers in Equine Exercise Physiology Meeting, Pullman, 1998.
35. **Presenter:** *Endocrine response to exercise in young and old female horses*, 5<sup>th</sup> International Conference on Equine Exercise Physiology, Utsunomiya, Japan, September, 1998.
36. **Presenter:** *Endothelin response to exercise in horses*, 2<sup>nd</sup> Conference of Researchers in Equine Exercise Physiology Meeting, East Lansing Michigan, November, 1997.
37. **Presenter:** *Chronic somatotropin (eST) administration does not affect aerobic capacity or indices of exercise performance in geriatric mares*, American Society of Animal Science Meeting, Nashville, 1997
38. **Presenter:** "Exercise capacity in young and geriatric female horses" 15th Equine Nutrition and Physiological Society Symposium, Fort Worth, Texas, 1997.
39. **Presenter:** *Exercise capacity in young and geriatric female horses*, 1<sup>st</sup> Conference of Researchers in Equine Exercise Physiology Meeting, Columbus, Ohio, November, 1996.
40. **Presenter:** *Workshop on measurement of maximal aerobic capacity in horses*, 1<sup>st</sup> Conference of Researchers in Equine Exercise Physiology Meeting, Columbus, Ohio, November, 1996.
41. **Invited Keynote Address:** *Erythropoietin: a new form of blood doping in horses*, 11th International Conference of Racing Analysts and Veterinarians, Gold Coast, Australia, 1996.
42. **Invited Keynote Integrative Paper:** *Neuroendocrine control of blood volume, blood pressure, and cardiovascular function in horses*. 4th International Conference on Equine Exercise Physiology, Brisbane, Australia, 1994.
43. **Presenter:** *Arterial and intracardiac pressure during progressive resistance exercise in ponies*, American College of Sports Medicine Meeting, Indianapolis, Indiana, 1994.
44. **Presenter:** *Effect of erythropoietin on plasma and red cell volume,  $VO_{2MAX}$ , and hemodynamics in exercising horses*. American College of Sports Medicine Meeting, Seattle, WA, 1993.
45. **Presenter:** *Fluid and electrolyte shifts during incremental exercise in horses*, 13th Equine Nutrition and Physiology Society Symposium, Gainesville, Florida, 1991.
46. **Presenter:** "Acute volume load during exercise in horses: atrial natriuretic peptide, vasopressin, and hemodynamics." American College of Sports National Medicine Meeting, Orlando, Fla, 1991.
47. **Presenter:** *Renal function and atrial natriuretic peptide in horses during submaximal exercise*, 1990 American College of Sports Medicine National Meeting, Salt Lake City, Utah.
48. **Presenter:** *Atrial natriuretic peptide during exercise in horses*, 3rd International Conference on Equine Exercise Physiology. Uppsala, Sweden, 1990.
49. **Expert Panelist:** *Workshop on Performance Testing Methods*, 3rd International Conference on Equine Exercise Physiology, Uppsala, Sweden, 1990.
50. **Presenter:** *Coagulation and fibrinolysis in horses during exercise*, American College of Sports Medicine National Meeting, Baltimore, Maryland, 1989.
51. **Presenter:** *Plasma volume expansion and renal control mechanisms following chronic submaximal exercise training*, 9th Equine Nutrition and Physiology Society Symposium, E. Lansing, MI, 1985.
52. **Presenter:** *Exercise training-induced hypervolemia in greyhound dogs: role of water intake, urine output, GFR, osmolar, and free water clearance*, 1984 Western Section American Society of Animal Science Meeting.

**Other Presentations:**

1. **Invited Lecture:** *Cranberries, Boots, and Helmets: an Overview of Nutraceuticals for Horses*, Rutgers University Equine Science Center Science Update, 2010.
2. **Invited Seminar Series:** *Three lectures on the comparative aspects of cardiovascular physiology*. Merck, Rahway, NJ, 2010.
3. **Invited Lecture:** *“An update on nutraceuticals and their effects on fighting inflammation-recent work in horses”* Center for Equine Health and the Kenneth L. Maddy Equine Analytical Chemistry Laboratory, University of California, Davis, 2009.
4. **Invited Lecture:** *“Functional foods for fighting inflammation-recent work in horses”* Comparative and Evolutionary Physiology Group, Department of Ecology and Evolutionary Biology, University of California, Irvine, 2009.
5. **Invited Lecture:** *“The Horse in Biomedical Research”*, School of Agriculture, Food Science, and Veterinary Medicine, University College Dublin, Ireland, 2009.
6. **Invited Lecture:** *“Nutraceuticals and Performance Horses”* University of Limerick Equine Science Program and the International Equine Institute, Limerick, Ireland, 2009
7. **Invited Lectures:** *“History of the horse in biomedical research”* and *“Functional foods to fight Inflammation”*, Department of Kinesiology and Physical Education, University of Maine, 2009.
8. **Invited Lecture:** *“Functional Foods for Fighting Inflammation: An Overview of Recent Research on the Use of Nutraceuticals for Equine Medicine & Health”* University of Kentucky, Gluck Equine Center, Department of Veterinary Science, Equine Diagnostic and Research Seminar, 2009.
9. **Invited Lecture:** *Recent Studies on the Effects of Aging and Training on the Acute Physiological Response to Exercise in Horses*, Department of Animal Science, Rutgers University, 2008.
10. **Invited Lecture:** *Effects of Aging and Training on the Acute Physiological Response to Exercise in Horses*, University of California, Davis, College of Veterinary Medicine, 2008.
11. **Invited Lecture:** *History of the Horse as a Model for Human Medical Research*, a fund raising seminar benefitting the Happy Trails Riding Academy a center for therapeutic riding for the handicapped, Visalia California, 2008.
12. **Invited Lecture:** *The Horse as an Animal Model for Medical Research*, Rutgers University, Equine Science Center, Inaugural Friends of the Equine Science Center Dinner Lecture, 2008.
13. **Invited Lecture:** *Myths and Fallacies of Various Drugs and Nutraceuticals*, University of Limerick, International Equine Institute, Limerick Ireland, 2007.
14. **Invited Lecture:** *New Controversies in Equine Drugs and Supplements*, San Luis Rey Equine Hospital and San Diego County Equine Practitioners, 2007.
15. **Invited Lecture:** *Myths and Fallacies of Various Drugs and Nutraceuticals*, Rutgers University Equine Science Center Science Update, 2006.
16. **Invited Lecture:** *Effects of Cranberry on Markers of Inflammation Following Acute Exercise in Horses, an Update and Plans for Future Research*, United States Army Natick Soldier System Center, Natick, MA, 2006.
17. **Invited Lecture:** *EPO Elicits and Ergogenic Effect in Equine*, Tufts Cummings School of Veterinary Medicine, North Grafton, MA, 2006.
18. **Invited Lecture:** *Erythropoietin Elicits an Ergogenic Effect in Equine*, Department of Animal Science, Cook College, Rutgers University. 2006.
19. **Invited Lecture:** *Nutraceuticals and their effects on performance and inflammation*, Department of Veterinary Physiology, College of Veterinary Medicine, Oklahoma State University, 2006.
20. **Invited Lecture:** *“Drugs and nutraceuticals Affecting Performance and Inflammation”*, Rutgers University Equine Science Center Science Update, 2005.
21. **Invited Lecture:** *“Physiology of Performance, Past, Present, and Future Research,”* Department of Animal Sciences, University of Kentucky, 2005.



22. **Invited Lecture:** “Nutraceuticals and their effects on Performance and Inflammation”, Department of Animal Sciences, Texas A and M University, 2005.
23. **Invited Lecture:** “The Use of Equine Exercise Stress in Evaluating Nutraceuticals”, Sigma Xi Chapter at the US Army Natick Soldier System Center, Natick, MA, 2004.
24. **Invited Lecture:** “Joint Seminar on the Strategy for Selecting Nutraceuticals for Improving Physical & Cognitive Performance” , US Army Natick Soldier System Center, Natick, MA , 2003.
25. **Invited Lecture:** “Combined effects of clenbuterol and training on the physiology of the horse.”Kansas State University College of Veterinary Medicine Department of Anatomy and Physiology seminar, 2001.
26. **Invited Lecture:**, 2001 Rutgers Horseman's Management Course, 2001.
27. **Invited Lecture:** Cargill Feeds, Inc, “Effect of age on thermoregulation in horses”2000.
28. **Invited Lecture:** Penn-Jersey Extension Partnership Barn Managers Seminar “Drugs and Performance”1999.
29. **Invited Lecture:** Merial Pharmaceuticals, Ltd. “Effects of Enalapril on Performance”1999.
30. **Invited Lecture:** Purina Horse Mgt. Seminar Series-Centenary College "Fluid and Electrolytes for the Exercising Horse.", 1996
31. **Invited Lecture:** Cumberland County 4-H “Equine Exercise Physiology Research, Teaching, and Outreach at Rutgers”, 1996.
32. **Invited Lecture:** NJ Equine Advisory Board “Aging and aerobic capacity in horses”, 1996
33. **Invited Lecture:** NJ Agricultural Experiment Station and the NJ Horse Council "Aerobic Capacity Testing using the Equine Treadmill", 1996.
34. **Invited Lecture:** *Exercise Physiology and Conditioning and Demonstration of Practical Methods for Assessing Fitness*, NJ Agricultural Experimentation Station and NJ Horse Council,1995.
35. **Invited Lecture:** *Neuroendocrine control of blood volume, blood pressure, and cardiovascular function in horses*, Department of Animal Science, Cook College, Rutgers University, 1994.
36. **Invited Lecture:** *Neuroendocrine control, erythropoietin and cardiovascular function*, University of Pennsylvania-New Bolton Center, 1994.
37. **Invited Lecture:** *Neuroendocrine Control of Cardiovascular Function*, Merck Research Labs, West Point, PA 1994.
38. **Invited Lecture:** *Neuroendocrine alterations with acute volume load during exercise* Circulation Technology Division, OSU College of Medicine Senior Seminar, 1994.
39. **Invited Lecture:** *Effects of training and rhuEPO on blood volume*, Cal Poly Pomona Equine Exercise Physiology Class and the Southern California Assn. of Racetrack Veterinarians, 1993.
40. **Invited Lecture:** *Misuse of Erythropoietin in Racehorses*, OSU Equine Practitioner's Short Course, 1993.
41. **Invited Lecture:** *Performance Evaluation*, Ohio State University Practitioner's Short Course, 1990.
42. **Invited Lecture:** *Equine Exercise Physiology*, OSU Equine Exercise Lab for Otterbein Univ. Equine Science Class, 1989.
43. **Invited Lecture:** *Equine Exercise Physiology*, OSU Pre-Veterinary Club, 1989.
44. **Invited Lecture:** *Using Heart Rate Monitoring for evaluation Performance*, US Combined Training Assn Area VIII Annual Mtg, 1989.
45. **Invited Lecture:** *History of Equine Exercise Physiology*, OSU Equine Practitioner's Short Course, 1989.
46. **Invited Lecture:** *Performance Evaluation*, Seminar for Bob Evans Farms 4-H Field Day, 1988.
47. **Panel Moderator and Invited Lecture:** *Heart Rate & Lactate in the Evaluation of Performance"*, OSU Horseman's Short Course, 1988.

## Undergraduate and Graduate Teaching

**Rutgers, 11:067:142**, Fall, 2003-2010. (3 credits) Introduction to Animal Science. *Coordinated course and lectured as part of this team taught course while Dr. Jesse was on sabbatical leave in 2003; lectures in 2004-2009.*

**Rutgers, 11:067:175**, Spring, 1998, (1 credit) Animal Handling, Fitting, and Exhibition - Horse section, *Coordinated course while Dr. Ralston was on sabbatical leave.*

**Rutgers, 11:067:207**, Spring, 1998, (2 credits) Horse Practicum, Coordinated course while Dr. Ralston was on sabbatical leave.

**Rutgers, 11:067:401**, Spring, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014 (3 credits) Topics in Equine Science. *This class teaches the students the basics of scientific method using lectures and discussions to compare and contrast articles from the current Equine Sports Science literature. By the end of the semester students can critique studies like journal referees pointing out the good and bad of various papers including the professor's. Offered every other year.*

**Rutgers, 11:067:402** Spring, 1996-present. (3 credits) Equine Exercise Physiology. *Developed and taught an upper division course in the physiology of the equine athlete. The class uses an modular format to present the integrative and comparative aspects of the physiology of the equine athlete.*

**Rutgers, 11:067:403** Fall and Spring, 2007-present. (3 credits) Techniques in Equine Exercise Physiology. *Developed and taught this upper division laboratory course. Developed this course to teach the concept of hypothesis driven research, sound study design and the basis for the techniques used in Equine Exercise Physiology. Students participate in ongoing projects and assist in the production of a video laboratory manual.*

**Rutgers, 16:067:508 and UMDNJ PHYS 5508** Spring, Ongoing (3 credits) 10-15 Students. Graduate Course in Equine Exercise Physiology. *Developed and taught this upper graduate course in the physiology of the equine athlete. The Department of Exercise and Sport Sciences has lost faculty and cannot offer enough electives for their students to graduate. Thus, for the past few years this class has been full and has served as one of the electives for their students.*

**Rutgers, 11:067:493**, Fall Semester, (Variable credits) Research in Animal Science. *8 to 20 students serves as an experiential techniques class for Animal Science majors as well as non-majors. Students learn about horse behavior and how to safely handle horses as well as the techniques involve in conducting exercise physiology research. The goal is to have each student learn the many techniques used in setting up and conducting a high speed treadmill test. Student learn about the scientific method, they learn sterile technique and how to place catheters, they learn each of the jobs necessary to conduct a test, and they learn to collect blood, urine, and other samples and to perform various assay. Many students sign up for multiple semesters.*

**Rutgers, 11:067:494**, Spring Semester, (Variable credits) Research in Animal Science. *8 to 20 students. This class is the second semester of an experiential techniques class for Animal Science majors as well as non-majors as described above. Class enrollment ranges from 8 to 15 students.*

**Rutgers, 11:015:497 and 11:015:498**, Fall/Spring (3-12 credits) G.H. Cook Honors Program: Advisor and/or reader for independent study project/course work of students conducting senior honors projects.

**Rutgers, 11:199:303 and 11:199:403**, Cooperative Education . Sponsor for students earning credit in full and part-time field experiences . Supervised employment in an area of interest to the student.

**Rutgers, 11:554:497** Fall , Spring, Ongoing. Honors Tutorial. Mentoring of Cook Undergraduate General Honors Program students independent research projects.

**Rutgers, 11:015:497** Fall, Spring, Ongoing. Biology Honors. Mentoring of Biological Science Undergraduate Honors Program students independent research projects.

**Rutgers, 16:076:502**, Spring, 1998, 1999, 2000. Mammalian Physiology. Lectures on renal function.

**Rutgers, 16:067:693/694**, 1997-1999, Fall 2006. Seminar in Animal Science. Coordinator of the graduate seminar for the Department of Animal Science.

**Rutgers, 16:067:701**, Fall, Spring, Ongoing. Research in Animal Science. Mentoring of graduate student research..

**University of Delaware**, Fall, 2002, 2003, Equine Science, Lectures on Equine Exercise Physiology.

**Delaware Valley College**, Winter, 1998, Anatomy and Physiology, Lectures on cardiopulmonary function. Part of Mid-Atlantic Consortium of the Kellogg Initiative.

**University of Pennsylvania, VCSN648**, Winter 1996-2008. 20-30 Students. Equine Exercise Physiology class. Provided lectures to Jr/Sr veterinary students at the New Bolton Center.

**Ohio State University VCS 696**, Spring, 1991, 1992, 1993, 1994, Equine Exercise Physiology Elective. Co-developed and co-taught this class to 20 Soph/Jr Vet. students and Graduate students.

**OSU HPER 714**, Spring, 1993, 1994, Advanced Exercise Physiology, Responses and Adaptation to Exercise. Team taught with Drs. Lamb, Alway, and Kirby. 10 graduate students.

**OSU HPER 801**, Winter, 1994, Exercise Physiology, Metabolism, Temperature, Water & Electrolyte Balance. Taught with Dr. W.M. Sherman. 12 graduate students.

**OSU HPER 886**, Winter, 1994, Exercise Physiology Colloquium, Lecture on "Intercardiac pressure during resistance exercise" 25-30 graduate level students.

**OSU VPP 411**, Winter, 1993, 1994, Veterinary Physiology; Lectures on renal function and endocrine (aldosterone, vasopressin, atrial natriuretic peptide, and plasma renin activity) control. 30-45 students.

**OSU VM 602**, Winter, 1991, 1992, 1993, 1994, Urinary Physiology Team: Lectures on renal physiology ~125 veterinary students.

**OSU VM 600**, Fall, 1992, 1993, Cardiovascular System. Taught laboratories designed to demonstrate cardiovascular control. 10 contact hrs, 125 students.

**OSU HPER 886**, Fall, 1991, Exercise Physiology Colloquium, Lecture on "Acute volume load during exercise in horses" 25-30 graduate level students.

**OSU VCS 710.05 and OSU VCS 710.06**, F, Wtr, Spr, Su 1988-1991, Clinical instruction and experience at Equine Exercise Physiology Lab.

**OSU HPER 886**, Fall, 1990 Exercise Physiology Colloquium: Lecture on "Renal Function During Exercise in Horses", 25-30 graduate level students.

**OSU VCS 731**, Spring, 1989 and 1990, Equine Medicine Elective- Lecture on Performance Evaluation in 1989. In 1990 developed and coordinated class "Topics in Equine Sports Medicine".

**OSU HPER 886**, Spring, 1989, Exercise Physiology Colloquium, Lecture and lab demonstration at Equine Exercise Physiology Laboratory. 25-30 graduate level students.

**OSU HPER 886**, Winter, 1988, Exercise Physiology Colloquium, Lecture on "Exercise-induced hypervolemia in horses" 25-30 graduate level students.

**OSU Internal Medicine 850.02**, Fall, 1987 Cardiology Resident's Conference, College of Medicine. Cardiovascular, renal, and endocrine responses to water immersion. 25 students.

**OSU Autotutorial**: Review of Cardiovascular Physiology. McKeever, K., J. Bonagura, and W. Muir.

**University of Arizona, AS 470**, Spring 1982, 1983, 1984, Horse Farm Management Lab, Lectures and Laboratory Sessions on Horse Farm Management Practices. 25 students.

## Graduate Student Advising:

### Ph.D. Students

<b>Rutgers University:</b>	Dylan Kien	Co-Major Advisor (2014-)
	Marc Turzon	External Committee Member (2014)
	Ali Janabi	Major Advisor (2014-)
	Ryan Avanetti	Co-Major Advisor (2009-2014)
	Patrick Davitt	Committee Member (2010-2013)
	Nettie Liburt	Major Advisor (2007-2010)
	Mary Beth Gordon	Major Advisor (2002-2005)
	Helio Manso	Major Advisor (2002-2005)
	Charles Kearns	Major Advisor (1996-2001)
	Emily Lamprecht	Committee Member (2006-2007)
	Paula Marie Ward	Committee Member (1995-1997)
	Angela Black, D.V.M.	Committee Member (1996)
<b>Swedish University of Agricultural Sciences</b>	Sara Ringmark	Dissertation Defense "Opponent" (2014)
<b>University of Maine</b>	Amy Hoffman	Committee Member (2010-Present)
<b>University College Dublin</b>	Rita Garcia da Fonseca	Defense External Committee Member (2011)
<b>University of Guelph</b>	Shannon Pratt	Defense Committee External Member (2005)
<b>University of Sydney</b>	Mathew Gerard	Dissertation External Reviewer, (2001)
<b>University of Helsinki</b>	Ulla-Maija Kokkonen	Dissertation External Reviewer, (2001)
<b>University of South Florida</b>	Todd Samelman	Chair, Dissertation Defense Committee (2000)
<b>Ohio State University:</b>	Brian Roche	Defense Committee (1999-2000)
<b>Ohio State University:</b>	James Schlub	Dissertation Committee (1992)
<b>Ohio State University:</b>	Ken Hinchcliff, D.V.M.	Co-Major Advisor (1987-1990)
<b>Ohio State University:</b>	James Farris	Committee Member (1989-1994)
<b>Ohio State University:</b>	Maurie Leutkemeier	Dissertation Committee (1987)

### Masters Degree Students

<b>Rutgers University:</b>	Alan Walker	Committee Member (2012-2014)
	James Baldassari	Major Advisor (2005-2010)
	Sara Malone	Major Advisor (2005-2008)
	Jennifer Stretslova	Major Advisor (2003-2005)
	Cynthia Betros	Major Advisor (2001-2005)
	Nettie Liburt	Major Advisor (2003-2005)
	Sunny Geiser	Major Advisor (1997-2003)
	Jacqueline Agans	Major Advisor (1996-1998)
	Rosanna Scali	Major Advisor (1996-1998)
	Elizabeth Kuhns	Major Advisor (1996)
	Lyn Venham	Committee Member (1996-1998)
<b>University of Maine</b>	Travis Bouchard	Committee Member (2011-2012)
<b>University of Limerick</b>	Julia Luehr	External Examiner (2010)
<b>Ohio State University:</b>	Beth McNally	Major Advisor (1992-1994)
	Clara Fenger,	Major Advisor (1991-1993)

Jodi Cooley	Co-Major Advisor with D.R. Lamb
Rick Wemple	Committee Member (1993-1994)
Laura Mitten	Committee Member
Susan Holcombe	Committee Member
Marge Bernbaum	Committee Member
John Mauterer	Committee Member
Scott Hannum	HPER 693 Research Supervisor

**Post-Doctoral (OSU)**

Robert Heck, M.D. Co-Advised these three residents with Dr. John Lombardo, Director of  
 Robert Whitehead, M.D. Sports Medicine at OSU, where we collaborated in the development  
 Wayne Auge, M.D. a model for progressive resistance exercise training using ponies.

Frank Andrews, DVM Six month position to assist in the OSU Equine Exercise Physiology Lab, (1987-1988).

**Undergraduate Student Advising:**

**Rutgers University**

- I serve as advisor for approximately 60 Sophomore to Senior undergraduate Animal Science students.
- 1997-2011 Served as one of three Freshman advisors (20-30 students/year).
- From 1996-1999 I served as an adjunct member of the Cook Scholars Program Committee reviewing applications, chairing presentation session, and reviewing final versions of the GH Cook thesis papers..
- I have served as GH Cook Scholars Program research advisor or reader for the following students:
 

Cheryl Harvey	2015 - Cook Scholars Program Advisor
Brittany Bozinni	2014 - SAS Senior Honors Thesis Reader
Amanda Xue	2014 - Cook Scholars Program Advisor
Jesse Liou	2013 - Cook Scholars Program Reader
Caitlin Belding	2009 - Cook Scholars Program Advisor
Jessica Aulisio	2009 - Cook Scholars Program Advisor
Jennifer Zambito	2008 - Cook Scholars Program Advisor
Allison Walker	2008 - Cook Scholars Program Advisor
Victoria Shekk	2007 - Cook Scholars Program Reader
Jessica Roos	2007 - Cook Scholars Program Advisor
Tom Caltabilota	2006 - Cook Scholars Program Advisor
Justin Milizio	2006 - Cook Scholars Program Advisor
Tiffany Trotter	2005 - Cook Scholars Program Advisor
Melissa Gates	2005 - Cook Scholars Program Reader
Courtney Dean	2004 - Cook Scholars Program Advisor
Cindy Echevarria	2003 - Cook Scholars Program Advisor
Melissa Lee	2003 - Cook Scholars Program Advisor
Jessica Alberici	2003 - Cook Scholars Program Advisor
Zenithson Ng	2003 - Cook Scholars Program Advisor
Denise Ciolino	2002 - Cook Scholars Program Advisor
Robert Norton	2002 - Cook Scholars Program Advisor
Elsa Schock	2002 - Cook Scholars Program Reader

Valerie Balaskonis	2001 - Cook Scholars Program Advisor
Amanda Szucsik	2001 - Cook Scholars Program Advisor
Maggie Struck	2001 - Cook Scholars Program Advisor
Taryn Eaton	1999 - Cook Scholars Program Advisor
Jamie Elia	1999 - Cook Scholars Program Reader
Lisa Antas	1996 - Cook Scholars Program Advisor
Jackie McClain	1996 - Cook Scholars Program Reader
Rebecca Fays	1996 - Cook Scholars Program Reader

### **Ohio State University--Students who were mentored and assisted in my lab at OSU:**

Doug Finley	Student Lab Assistant (Exercise Physiology Student)
Crystal Ponser	Work Study Supervisor (Currently a practicing veterinarian)
Michael Howenstein	Work Study Supervisor (Currently a practicing veterinarian)
Melorie Kip	Work Study Supervisor
Arabella Nuygen	Work Study Supervisor
Toby Burke	Work Study Supervisor
Kevin Kirby	Student Lab Assistant (Aerospace Engineering Student)
Eric Rennie	Student Lab Assistant (Exercise Physiology Student)
Richard Yurich	Advised & sponsored for admission to Exer. Physiol. Prgm
Shelly Zimmerman	Work Study Supervisor (Vocational Agriculture Instructor)
Veronica Wong	Work Study Supervisor (Currently a practicing DVM)
Laura Schmidt	Work Study Supervisor (Currently a practicing DVM)

### ***High School Students***

I believe one should strive to provide educational opportunities to recruit minority and women students into the biomedical sciences. The following students have participated in Summer research programs in my laboratory:

#### **Rutgers:**

Shanta Jones	1999	American Chemical Society Seed Program - Mentor
Vivek Sharma	1998	American Chemical Society Seed Program - Mentor
Yanerez Diaz	1997	American Chemical Society Seed Program - Mentor
Tiffany Horton	1996	NJAES-Cook College Discovery Academic Enrichment Program Mentor
Natalie Ogonowski	1996	NJAES-Cook College Discovery Academic Enrichment Program Mentor
Edina Montanaro	1996	NJAES-Cook College Discovery Academic Enrichment Program Mentor
Arpana Pillay	1996	American Chemical Society Seed Program - Mentor

#### **Ohio State University:**

Alpha Griffin	1993	NIH-Summer Minority Research Apprenticeship Program.
Suprina Nindra	1992	NIH-Summer Minority Research Apprenticeship Program. Won best presentation award for students working in the College of Veterinary Med.
Danielle Ginn	1991	NIH-Summer Minority Research Apprenticeship Program
Lannelle Williams	1990	NIH-Summer Minority Research Apprenticeship Program

### ***Student Organizations***

- Faculty Advisor for the Rutgers Water Polo Club (25 students).
- Faculty Advisor for the OSU Men's Water Polo Club (25 students).
- Faculty Advisor for the OSU Women's Water Polo Club (15 students).

### **Consulting and Outside Work:**

**Expert Witness** - Comedy Hill Racing Stable vs. Robert McIntosh Racing Stable, et al., American Arbitration Association Case No.: 50 181 R 00081 07 - *Provided key reports and consultation that contributed to achieving a settlement in this case.*

**Expert Witness** - Two Defense cases vs. the Texas Racing Commission - *Provided key testimony that led to two victories in these "Milkshaking"/alkalinizing agent cases against the Texas Racing Commission.*

**Expert Witness** - Maryland Attorney General/Racing Commission - *Provided key testimony that led to a victory in this test case for the alkalinizing agent detection program for Maryland both at the trial level, at the appellate level, and the MD Supreme Court.*

**Expert Witness** - New Jersey Attorney General/Racing Commission - *Provided key testimony that led to a victory in this test case for the alkalinizing agent detection program both at the trial court level and at the NJ Supreme Court. Approximately 50 other cases held behind this case.*

**Expert Witness** - New York State Racing and Wagering Board - *Provided key testimony that led to victories in five alkalinizing agent ("Milkshaking") cases.*

**Expert Witness** - Delaware Standardbred Owners Association - *Provided key information and analysis to help find the reason for a major series of milkshaking inadvertent positives.*

**Expert Witness** - Trader vs. the Delaware Racing Commission - *Provided information and analysis that suggested that the positive test for milkshaking was due to inadvertent application of legal treatments affecting bicarbonate status. The testimony was key to the reversal of penalties in this case.*

**Expert Witness** - Warrington vs. the Delaware Racing Commission - *Provided information and analysis.*

**Expert Witness** - Comedy Hill Stables vs. multiple defendants - *Provided key information and analysis that suggested that the positive test for rhuEPO was due to administration prior to acquisition of the horses by the current owners.*

**Expert Consultant** - Office of the Camden County Prosecutor. *Provided key information for regarding a guanabenz case.*

**Expert Consultant** - Ontario Racing Commission - *Provided key information for the formulation of new drug testing protocols and procedures.*

**Expert Consultant** - Indiana Horse Racing Commission - *Provided key information for the formulation of new drug testing protocols and procedures.*

**Expert Consultant** - Kentucky Horse Racing Authority - *Provided key information for the formulation of new drug testing protocols and procedures.*

**Expert Witness** - the American Horse Shows Association - *Provided key information for two drug cases.*

**Research Consultant** - Various projects including: Miles/Bayer Inc. (1995-1995); Merck (1989-1993).

**Research Consultant** - Consulted with Ken Kober from Columbus Instruments, Inc. to develop the prototype model of the Oxymax-XL large animal calorimeter, the first commercially produced system for the measurement of oxygen uptake and carbon dioxide production in exercising horses.

**Technical Support:** Provided technical support and information to Drs. Joe Pagan and Steve Jackson, Kentucky Equine Research, Inc. for development of an exercise testing lab at their facility in Lexington.

**Technical Support:** Provided technical support and research information to Dr. Luka Krusic, Equine Clinician and Exercise Physiologist, Munich, Germany.

**Technical Support:** Provided technical support and information to Dr. John Foreman for the development of the Equine Exercise Physiology Lab. at the University of Illinois, College of Veterinary Medicine.

**Technical Support:** Provided technical support and information to Dr. Larry Soma for the development of the Equine Exercise Physiology Lab at the University of Pennsylvania., College of Veterinary Medicine.

**Technical Support:** Provided technical support and information to Dr. Frank Andrews for development of an Equine Exercise Physiology Lab at the University of Tennessee, College of Veterinary Medicine.

**Reviewed/edited** manuscript for Dr. Anton Usaj, Faculty for Sport, Univ. of Ljubljani, Slovenia.

**Technical Support:** Provided technical information and support to David Lambert, DVM, of Prestonwood Farm, Inc. for the development of an equine exercise testing laboratory.

**Technical Support:** for Viking Meadows Farms, Carmel Indiana, 1989.

**Technical Support:** Provided technical support to Dr. David Keogh of Yellow Springs Instruments, Inc. for the development of their portable lactate analyzer.

**Consultant:** Tested a heart rate monitor and wrote user's manual for Polar Electro, Inc.. Ohio State University received 2 heart rate meters.

**OSU Athletic Testing** - analysis of blood samples from the OSU Swimming Team for blood lactate concentrations.

### **Other Activities:**

Water Polo Coach - Rutgers Water Polo Club 2003-Present

Goalie - OSU Water Polo Club (1987-1995; 1988-Big 10 Champions) North Coast Water Polo Club and Columbus Crush Water Polo Club (1987-1995); Rutgers Water Polo Club (1995-Present), Lobos 55 Masters Water Polo Club (2007-present), New Jersey Masters Water Polo Club (2011-Present), Kaos Water Polo Club (2014)

Member - United States of America Water Polo

Member - American Water Polo Association.

Member - Ancient Order of Hibernians.