

# Michael D. Delp, Ph.D.

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## EDUCATION

1984	B.S.	Oral Roberts University	<i>Major:</i> Biomedical Chemistry
1988	M.A.	University of Georgia	<i>Concentration:</i> Exercise Physiology
1990	Ph.D.	University of Georgia	<i>Concentration:</i> Exercise Physiology

## PROFESSIONAL EXPERIENCE

1984-85	Laboratory Instructor, Biology and Chemistry Departments, College of Science and Engineering, Oral Roberts University, Tulsa, OK
1985-90	Graduate Research Assistant, Kinesiology Department, College of Education, University of Georgia, Athens, GA
1990-91	Research Fellow, Biology Department, University of Konstanz, Konstanz, Germany
1991-92	Postdoctoral Fellow, Departments of Veterinary Biomedical Sciences and Medical Pharmacology and Physiology, University of Missouri, Columbia, MO
1992-95	Assistant Professor, Department of Cardiothoracic Surgery, Medical College of Pennsylvania and Hahnemann University, Allegheny General Hospital Campus, Pittsburgh, PA
1995-05	Assistant Professor ('95-'99), Associate Professor ('99-'03), Professor ('03-'05), Department of Health and Kinesiology, College of Education and Human Development, Texas A&M University, College Station, TX
1995-05	Joint appointment in the Department of Medical Physiology, Texas A&M University Health Science Center, College Station, TX
2005-07	Professor, Division of Exercise Physiology, Department of Physiology & Pharmacology, and Center for Interdisciplinary Research in Cardiovascular Sciences, West Virginia University School of Medicine, Morgantown, WV
2007-14	Professor, Department of Applied Physiology and Kinesiology, College of Health and Human Performance, University of Florida, Gainesville, FL
2014-	Professor, Department of Nutrition, Food and Exercise Sciences, College of Human Sciences, Florida State University, Tallahassee, FL

## ADMINISTRATIVE EXPERIENCE

2005-07	Vice Chair, Division of Exercise Physiology, West Virginia University School of Medicine
2005-07	Director of Graduate Studies in Exercise Physiology, Interdisciplinary Program in Biomedical Sciences, Office of Research & Graduate Education, West Virginia University Schools of Medicine and Pharmacy
2007-14	Chair, Department of Applied Physiology and Kinesiology, College of Health and Human Performance, University of Florida
2014-	Dean, College of Human Sciences, Florida State University, Tallahassee

## PROFESSIONAL DEVELOPMENT

2007	Department Chairs Workshop I, Institute for Academic Leadership, Office of the Provost, Florida State University
2008	Department Chairs Workshop II, Institute for Academic Leadership, Office of the Provost, Florida State University

- 2010 Development Workshop – Insight Into Philanthropy, Advancement Resources, University of Florida  
 2011-12 Advanced Leadership Development for Academics, University of Florida

## PROFESSIONAL SOCIETIES

- 1986-90 Southeast Chapter of the American College of Sports Medicine  
 1988- American College of Sports Medicine  
 1988- American Physiological Society; Elected to Regular Membership, 1996  
 1993- Microcirculatory Society  
 1996-05 Texas Chapter of the American College of Sports Medicine  
 2000- Alexander von Humboldt Association of America

## HONORS AND AWARDS

- 1985 Collegiate Research Presentation Award for Biochemistry and Physiology, Oklahoma Academy of Science  
 1989 Research/Teaching Merit Award, University of Georgia Graduate School  
 1990-91 Alexander von Humboldt Research Fellowship Award, Germany  
 1993 National Research Council Travel Award to the 32<sup>nd</sup> International Congress of Physiological Sciences, Glasgow, Scotland  
 1995 Fellow, American College of Sports Medicine  
 1996 New Investigator Award, American College of Sports Medicine  
 1997 National Research Council Travel Award to the 33<sup>rd</sup> International Congress of Physiological Sciences, St. Petersburg, Russia  
 1997 Outstanding New Faculty Award, College of Education and Human Development, Texas A&M University  
 2000 In the *Journal of Applied Physiology* Highlighted Topics series: Physiology of a Microgravity Environment, McCurdy et al. (*JAP* 89: 398-405, 2000) was published as the Selected Contribution and accompanied by an editorial commentary (*JAP* 89: 397, 2000)  
 2000-05 University Faculty Fellow, Texas A&M University  
 2001 Texas Chapter of the American College Sports Medicine Lecture Tour  
 2004 In the *Journal of Physiology (London)*, Spier et al. (556: 947-958, 2004) was accompanied by editorial commentary (Dinneno, *J. Physiol. (London)* 556: 673, 2004)  
 2005 Distinguished Achievement Award in Research, Texas A&M University Association of Former Students (five or six awarded annually from among more than 2,500 faculty)  
 2008 In the *Journal of Applied Physiology*, Behnke et al. (104: 1273-1280, 2008) was accompanied by editorial commentary (Schrage, *J. Appl. Physiol.* 104: 1257-1258, 2008)  
 2008 In the *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*, Colleran et al. (294: R1577-R1585, 2008) was accompanied by editorial commentary (Ray, *Am. J. Physiol.Reg. Int. Comp. Physiol.* 294: R1575-R1576, 2008)  
 2013 Honor Award and Raven Lecturer, Texas Chapter of the American College of Sports Medicine  
 2015 American Physiological Society through APSselect recognizes Ghosh et al. (118: 904-911, 2015) for Distinction in Scholarship in the *Journal of Applied Physiology*  
 2016 Appointed the Betty M. Watts Professor of Nutrition, Food & Exercise Sciences

## EDITORIAL AND REVIEWING ACTIVITIES

### Editorial Boards:

- *Journal of Applied Physiology*, 2002-2009
- *Medicine & Science in Sports & Exercise*, 2005-2009
- *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*, 2008-2012
- *Frontiers in Physiology*, 2016-present

### Journal Review:

- *Advances in Physiological Education*

- *American Journal of Cardiology*
- *American Journal of Obstetrics and Gynecology*
- *American Journal of Physiology: Cell Physiology*
- *American Journal of Physiology: Heart and Circulatory Physiology*
- *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*
- *Anatomical Record*
- *Applied Physiology, Nutrition and Metabolism*
- *Bone*
- *Brain Research*
- *Canadian Journal of Physiology and Pharmacology*
- *Cardiovascular Research*
- *Circulation*
- *Circulation Research*
- *Clinical Orthopaedics and Related Research*
- *Comparative Biochemistry and Physiology*
- *European Journal of Applied Physiology*
- *Experimental Gerontology*
- *Experimental Physiology*
- *FASEB Journal*
- *Hypertension*
- *International Journal of Sports Medicine*
- *Journal of Applied Physiology*
- *Journal of Avian Biology*
- *Journal of Biomechanical Engineering*
- *Journal of Bone and Mineral Research*
- *Journal of Cardiac Surgery*
- *Journal Cellular and Molecular Medicine*
- *Journal of Experimental Biology*
- *Journal of Gravitational Physiology*
- *Journal of Investigative Medicine*
- *Journal of Physiology (London)*
- *Journal of Vascular Research*
- *Life Sciences in Space Research*
- *Medicine and Science in Sports and Exercise*
- *Microcirculation*
- *Microvascular Research*
- *Physiological Reports*
- *PLoS One*
- *Radiation Research*
- *Respiratory Physiology and Neurobiology*
- *Vascular Pharmacology*

**Abstract Review:**

- Hemodynamics Section, American College of Sports Medicine, 1993-1995

**Grant Review:**

- National Aeronautics and Space Administration (NASA) Cardiopulmonary Physiology committee, 1994-1996
- NASA Integrated Physiology and Human Factors committee, 1995
- U.S. Department of Defense, Gulf War Illness Physiology committee, 1995
- Italian "Comitato Promotore Telethon" for Scientific Research on Muscular Dystrophy and Genetic Diseases, *ad hoc* reviewer, 1998
- NASA Cardiopulmonary Physiology of Flight, International committee, 2000
- U.S. Department of Veterans Affairs, 2000 and 2001
- NASA University Research Center Grant (grant review and site visit), Morehouse School of Medicine, Atlanta, Georgia, 2000

- NASA Cardiopulmonary Physiology, 2001
- NASA Integrated Physiology and Clinical Operations of Flight, International committee, 2001
- Natural Sciences and Engineering Research Council of Canada, *ad hoc* reviewer, 2002
- Killam Research Fellowship, Canada Council for the Arts, *ad hoc* reviewer, 2002
- Canadian Space Agency, Life Sciences Program, 2002
- NASA Biospecimen Sharing Program, 2003
- NASA Cardiovascular Alterations, International committee, 2004
- American Heart Association Western Review Consortium Peer Review Committee, 2005
- American Federation for Aging Research, member, 2008
- Natural Sciences and Engineering Research Council of Canada, Canadian Space Agency Space Science Enhancement Program study section, 2009
- NASA/NSBRI Crew Health: Visual Impairment / Intracranial Pressure committee, 2013
- NASA/NSBRI Crew Health: Research and Technology Development committee, 2013
- NASA/NSBRI Crew Health: Visual Impairment / Intracranial Pressure committee, 2014
- NSBRI First Award for Post-Doctoral Research committee, 2015
- Center for the Advancement of Science in Space (CASIS), *ad hoc* reviewer, 2015
- European Space Agency/NASA: Artificial Gravity Bed Rest (Chair), International committee, 2016

#### **Program Review:**

- Department of Kinesiology, Mississippi State University 2011
- Department of Kinesiology, Indiana University 2011
- Department of Kinesiology, University of Maryland 2012
- College of Sports Science, King Saud University, Saudi Arabia 2012
- Department of Kinesiology & Sport Management (Doctoral Program Review), Texas Tech University, 2016

## **EXTRAMURAL GRANTS**

#### **Completed:**

- Alexander von Humboldt-Foundation Research Fellowship: Satellite Cell Involvement in Muscle Fiber Transformation. Principal Investigator (Dr. Dirk Pette, sponsor) University Konstanz, Germany, 1990-1991, DM 50,000
- National Aeronautics and Space Administration (NAGW-4842 and NAG5-3754): Skeletal Muscle Arteriolar Adaptations to Simulated Microgravity. Principal Investigator, 1995-1999, \$329,093
- U.S. Environmental Protection Agency (5D2283NAEX): Influence of Age on Anatomical and Circulatory Parameters Used for Physiologically Based Pharmacokinetic Modeling. Principal Investigator, 1995-1996, \$10,501
- National Space and Biomedical Research Institute (NCC9-58): Bone Blood Flow During Simulated Microgravity: Physiological and Molecular Mechanisms. Co-Principal Investigator (Co-PIs: SA Bloomfield and L Suva), 1997-2000, \$699,608
- American Heart Association-Texas Affiliate (98BG801): Aging-Induced Adaptations in Vasoreactive Properties of Skeletal Muscle Arterioles. Co-Investigator (PI: JM Muller-Delp), 1998-2000, \$82,744
- National Aeronautics and Space Administration (NAG2-1340): Adaptations of Visceral and Cerebral Resistance Arteries to Simulated Microgravity. Principal Investigator, 1999-2003, \$446,214
- National Institutes of Health R01: Chronic Coronary Occlusion, Exercise Training and NO. Co-Investigator (PI: JL Parker), 2000-2005, \$1,800,000
- Texas Equine Research Fund: Reduced Uterine Muscle Contractility in Mares Susceptible to Persistent, Post-Mating Endometritis - Is there a Structural Component to the Contractile Defect? Co-Investigator

(PI: SL Rigby), 2000-2002, \$22,540

- National Aeronautics and Space Administration (Biospecimen Sharing Program): The Effects of Microgravity on Femoral Arterial Structure. Principal Investigator, 2001-2003
- National Aeronautics and Space Administration (Biospecimen Sharing Program): The Effects of Microgravity on Cardiac Mass and Extracellular Matrix Proteins. Principal Investigator, 2001-2003
- National Space and Biomedical Research Institute (NCC9-58-42): Circulatory Remodeling with Simulated Microgravity. Principal Investigator, 2001-2004, \$884,884
- National Institutes of Health R21: Aging and Endothelial Function of Muscle Arterioles. Co-Investigator (PI: JM Muller-Delp), 2001-2003, \$410,440
- Grayson-Jockey Club Research Foundation, Inc.: Mares with Delayed Uterine Clearance: Is Nitric Oxide Involved? Co-Investigator (PIs: SL Rigby and JM Muller-Delp), 2001-2003, \$94,358
- U.S. Environmental Protection Agency: Reducing Uncertainty in Children's Risk Assessment: Development of a Quantitative Approach for Assessing Internal Dosimetry Through Physiologically-Based Pharmacokinetic Modeling. Co-Investigator (PI: James V. Bruckner), 2003-2006, \$749,991
- National Space and Biomedical Research Institute (NCC9-58 Phase I Training Grant): A Graduate Education Program Focusing on Space Life Sciences. Co-Investigator, 2004-2005, \$90,661
- National Aeronautics and Space Administration (NCC2-1166): Arterial Remodeling and Functional Adaptations Induced by Microgravity. Principal Investigator, 2000-2007, \$1,383,640
- National Aeronautics and Space Administration (NNA04CC66G): Adaptations of Cerebral Arteries to Simulated Microgravity. Principal Investigator, 2004-2007, \$771,850
- National Institutes of Health NRSA: Vascular Structure and Function with Aging. Sponsor (PI: Bradley J. Behnke), 2006-2009, \$184,772
- National Aeronautics and Space Administration (NNX08AQ62G): International Space Station Mouse Experiment: Effects of Microgravity on Regional Arterial Remodeling. Principal Investigator, 2008-2009, \$23,500
- National Institute on Aging (R36 AG036816): Improved Endothelial Cell Function May Modulate Increased Bone Parameters. Sponsor (PI: James M. Dominguez II), 2010-2011, \$91,106
- National Institutes of Health (R01HL090937): Microvascular Aging and eNOS Uncoupling. Co-Investigator (PI: J Muller-Delp), 2009-2011, \$414,729
- King Saud University – Al Riyadh: King Saud University and University of Florida Bilateral Curriculum and Research Development Project. Co-PI (PI: Michael Sagas), 2012-2013, \$85,844
- National Aeronautics and Space Administration (NNX09AP06G): Bion-M1 Project: Regional Arterial Remodeling Induced by Microgravity. Principal Investigator, 2009-2014, \$165,000
- National Space and Biomedical Research Institute (MA02501): Simulated Space Radiation and Weightlessness: Vascular-Bone Coupling Mechanisms to Preserve Skeletal Health. Co-Investigator (PI: Ruth Globus), 2011-2016, \$1,640,000 (PI on subcontract to University of Florida and Florida State University, \$277,001)

**Active:**

- National Aeronautics and Space Administration (NNX12AL41G & NNX14AQ57G): Disuse Osteopenia: A Potential Vascular Coupling Mechanism. Principal Investigator, 2012-2017, \$396,379
- National Aeronautics and Space Administration (NNX16AC28G): Effects of Microgravity on Cerebral Arterial, Venous and Lymphatic Function: Implications for Elevated Intracranial Pressure. Principal Investigator, 2013-2018, \$750,000
- National Aeronautics and Space Administration (NNX15AE86G): Effects of Spaceflight on Ocular Oxidative Stress and the Blood-Retinal Barrier. Principal Investigator, 2014-2018, \$149,921

## BIBLIOGRAPHY

### Refereed Journal Articles:

1. Armstrong, RB, **MD Delp**, EF Goljan and MH Laughlin. Distribution of blood flow in muscles of miniature swine during exercise. *J. Appl. Physiol.* 62: 1285-1298, 1987.
2. Armstrong, RB, **MD Delp**, EF Goljan and MH Laughlin. Progressive elevations in muscle blood flow during prolonged exercise in swine. *J. Appl. Physiol.* 63: 285-291, 1987.
3. **Delp, MD**, and RB Armstrong. Blood flow in normal and denervated muscle during exercise in conscious rats. *Am. J. Physiol. Heart Circ. Physiol.* 255: H1509-H1515, 1988.
4. Dishman, RK, RB Armstrong, **MD Delp**, RE Graham and AL Dunn. Open-field behavior is not related to treadmill performance in exercising rats. *Physiol. Behav.* 43: 541-546, 1988.
5. Norton, KI, **MD Delp**, WK Prusaczyk and RB Armstrong. A comparison of methods used to determine  $\text{VO}_2$  of exercising humans and animals. *Med. Sci. Sports Exerc.* 21: 480-486, 1989.
6. Laughlin, MH, RE Klabunde, **MD Delp** and RB Armstrong. Effects of dipyridamole on muscle blood flow in exercising miniature swine. *Am. J. Physiol. Heart Cir. Physiol.* 257: H1507-H1515, 1989.
7. Armstrong, RB, DA Hayes and **MD Delp**. Blood flow distribution in rat muscles during preexercise anticipatory response. *J. Appl. Physiol.* 67: 1855-1861, 1989.
8. **Delp, MD**, MH Laughlin and RB Armstrong. No relationship between progressive muscle hyperaemia and temperature in exercising rats. *J. Exp. Biol.* 141: 87-95, 1989.
9. Duan, C, **MD Delp**, DA Hayes, PD Delp and RB Armstrong. Skeletal muscle mitochondrial  $[\text{Ca}^{2+}]$  and injury from downhill walking. *J. Appl. Physiol.* 68: 1241-1251, 1990.
10. Ray, CA, **MD Delp** and DK Hartle. Interactive effect of body posture on exercise-induced atrial natriuretic peptide release. *Am. J. Physiol. Endocrinol. Metab.* 258: E775-E779, 1990.
11. Norton, KI, **MD Delp**, MT Jones, C Duan, DR Dengel and RB Armstrong. Distribution of blood flow during exercise after blood volume expansion in swine. *J. Appl. Physiol.* 69: 1578-1586, 1990.
12. Norton, KI, **MD Delp**, C Duan, JA Warren and RB Armstrong. Hemodynamic responses during exercise at and above  $\text{VO}_{2\text{max}}$  in swine. *J. Appl. Physiol.* 69: 1587-1593, 1990.
13. **Delp, MD**, RO Manning, JV Bruckner and RB Armstrong. Distribution of cardiac output during diurnal changes of activity in rats. *Am. J. Physiol. Heart Circ. Physiol.* 261: H1487-H1493, 1991.

14. McDonald, KS, **MD Delp** and RH Fitts. Effect of hindlimb unweighting on tissue blood flow in the rat. *J. Appl. Physiol.* 72: 2210-2218, 1992.
15. McDonald, KS, **MD Delp** and RH Fitts. Fatigability and blood flow in the rat gastrocnemius-plantaris-soleus after hindlimb suspension. *J. Appl. Physiol.* 73: 1135-1140, 1992.
16. Armstrong, RB, C Duan, **MD Delp**, DA Hayes, GM Glenn and GD Allen. Elevations in rat soleus muscle  $[Ca^{2+}]$  with passive stretch. *J. Appl. Physiol.* 74: 2990-2997, 1993.
17. **Delp, MD**, RM McAllister and MH Laughlin. Exercise training alters endothelium-dependent vasoreactivity of rat abdominal aorta. *J. Appl. Physiol.* 75: 1354-1363, 1993.
18. **Delp, MD**, T Holder-Binkley, MH Laughlin and EM Hasser. Vasoconstrictor properties of rat aorta are diminished by hindlimb unweighting. *J. Appl. Physiol.* 75: 2620-2628, 1993.
19. **Delp, MD**, and D Pette. Morphological changes during fiber type transitions in low-frequency-stimulated rat fast-twitch muscle. *Cell Tissue Res.* 277: 363-371, 1994.
20. **Delp, MD**, RM McAllister and MH Laughlin. Exercise training alters aortic vascular reactivity in hypothyroid rats. *Am. J. Physiol. Heart Circ. Physiol.* 268: H1428-H1435, 1995.
21. **Delp, MD**, M Brown, MH Laughlin and EM Hasser. Rat aortic vasoreactivity is altered by old age and hindlimb unloading. *J. Appl. Physiol.* 78: 2079-2086, 1995.
22. McAllister, RM, **MD Delp**, KA Thayer and MH Laughlin. Muscle blood flow during exercise in sedentary and trained hypothyroid rats. *Am. J. Physiol. Heart Circ. Physiol.* 269: H1949-H1954, 1995.
23. **Delp, MD**, and C Duan. Composition and size of type I, IIA, IID/X and IIB fibers and citrate synthase activity of rat skeletal muscle. *J. Appl. Physiol.* 80: 261-270, 1996.
24. **Delp, MD**, C Duan, JP Mattson, and TI Musch. Changes in skeletal muscle biochemistry and histology relative to fiber type in rats with congestive heart failure. *J. Appl. Physiol.* 83:1291-1299, 1997.
25. **Delp, MD**, and MH Laughlin. Time-course of enhanced endothelium-mediated dilation in aorta of trained rats. *Med. Sci. Sports Exerc.* 29: 1454-1461, 1997.
26. McAllister, RM, VD Grossenburg, **MD Delp**, and MH Laughlin. Effects of hyperthyroidism on vascular contractile and relaxation responses (Special Communication). *Am. J. Physiol. Endocrinol. Metab.* 274: E946-E953, 1998.
27. Salter, JM, VM Cassone, MK Wilkerson, and **MD Delp**. Ocular and regional cerebral blood flow in aging Fischer-344 rats. *J. Appl. Physiol.* 85: 1024-1029, 1998.
28. **Delp, MD**, MV Evans, and C Duan. Effects of aging on cardiac output, regional blood flow and body composition in rats. *J. Appl. Physiol.* 85: 1813-1822, 1998.
29. Carrasco, DI, **MD Delp**, and CA Ray. Effect of concentric and eccentric muscle actions on muscle sympathetic nerve activity. *J. Appl. Physiol.* 86: 558-563, 1999.
30. **Delp, MD**, C Duan, CA Ray, and RB Armstrong. Rat hindlimb muscle blood flow during level and downhill locomotion. *J. Appl. Physiol.* 86: 564-568, 1999.
31. **Delp, MD**. Myogenic and vasoconstrictor responsiveness of skeletal muscle arterioles is diminished by hindlimb unloading. *J. Appl. Physiol.* 86: 1178-1184, 1999.
32. Demaree, SR, JM Lawler, J Linehan, and **MD Delp**. Ageing alters aortic antioxidant enzyme activities in

- Fischer-344 rats. *Acta Physiol. Scand.* 166: 203-208, 1999.
33. Spier, SA, MH Laughlin, and **MD Delp**. Effects of acute and chronic exercise on vasoconstrictor responsiveness of rat abdominal aorta. *J. Appl. Physiol.* 87: 1752-1757, 1999.
  34. Wilkerson, MK, JM Muller-Delp, PN Colleran, and **MD Delp**. Effects of hindlimb unloading on cerebral, splenic, and mesenteric resistance artery morphology. *J. Appl. Physiol.* 87: 2115-2121, 1999.
  35. **Delp, MD**, PN Colleran, MK Wilkerson, MR McCurdy and JM Muller-Delp. Structural and functional remodeling of skeletal muscle microvasculature is induced by simulated microgravity. *Am. J. Physiol. Heart Circ. Physiol.* 278: H1866-H1873, 2000.
  36. McCurdy, MR, PN Colleran, JM Muller-Delp, and **MD Delp**. Selected Contribution: Effects of fiber composition and hindlimb unloading on the vasodilator properties of skeletal muscle arterioles. *J. Appl. Physiol.* 89: 398-405, 2000. Accompanied by an editorial commentary (*J. Appl. Physiol.* 89: 397, 2000).
  37. Colleran, PN, MK Wilkerson, SA Bloomfield, LJ Suva, RT Turner, and **MD Delp**. Alterations in skeletal perfusion with simulated microgravity: A possible mechanism for bone remodeling. *J. Appl. Physiol.* 89: 1046-1054, 2000.
  38. Wunsch, SA, JM Muller-Delp, and **MD Delp**. Time course of vasodilatory responses in skeletal muscle arterioles: Role in hyperemia at the onset of exercise. *Am. J. Physiol. Heart Circ. Physiol.* 279: H1715-H1723, 2000.
  39. **Delp, MD**, RB Armstrong, DA Godfrey, MH Laughlin, CD Ross and MK Wilkerson. Exercise increases blood flow to locomotor, vestibular, cardiorespiratory, and visual regions of the brain in miniature swine. *J. Physiol.* 533: 849-859, 2001.
  40. Rigby, SL, R.Barhoumi, RC Burghardt, PN Colleran, JA Thompson, DD Varner, TL Blanchard, SP Brinsko, T Taylor, MK Wilkerson, and **MD Delp**. Mares with delayed uterine clearance have an intrinsic defect in myometrial function. *Biol. Reprod.* 65: 740-747, 2001.
  41. Ray, CA, M Vasques, TA Miller, MK Wilkerson, and **MD Delp**. Effects of short-term microgravity and long-term hindlimb unloading on rat cardiac mass and function. *J. Appl. Physiol.* 91: 1207-1213, 2001.
  42. Miller, TA, LA Lesniewski, JM Muller-Delp, AK Majors, D Scalise, and **MD Delp**. Hindlimb unloading induces a collagen isoform shift in the soleus muscle of the rat. *Am. J. Physiol. Reg. Int. Comp. Physiol.* 281: R1710-R1717, 2001.
  43. Wilkerson, MK, PN Colleran, and **MD Delp**. Acute and chronic head-down tail-suspension diminishes cerebral perfusion in the rat. *Am. J. Physiol. Heart Circ. Physiol.* 282: H328-H334, 2002.
  44. Bloomfield, SA, HA Hogan, and **MD Delp**. Decreases in bone blood flow and bone material properties in aging Fischer-344 rats. *Clin. Orthop. Relat. Res.* 396: 248-257, 2002.
  45. Muller-Delp, JM, SA Spier, MW Ramsey, LA Lesniewski, A Papadopoulos, JD Humphrey, and **MD Delp**. Effects of aging on vasoconstrictor and mechanical properties of rat skeletal muscle arterioles. *Am. J. Physiol. Heart Circ. Physiol.* 282: H1843-H1854, 2002.
  46. Bloomfield, SA, MR Allen, HA Hogan, and **MD Delp**. Site- and compartment-specific changes in bone with hindlimb unloading in mature adult rats. *Bone* 31: 149-157, 2002.
  47. Muller-Delp, JM, SA Spier, MW Ramsey, and **MD Delp**. Aging impairs endothelium-dependent vasodilation in rat skeletal muscle arterioles. *Am. J. Physiol. Heart Circ. Physiol.* 283: H1662-H1672, 2002.



48. Mattson, JP, TA Miller, DC Poole, and **MD Delp**. Fiber composition and oxidative capacity of hamster skeletal muscle. *J Histochem. Cytochem.* 50: 1685-1692, 2002.
49. Papadopoulos, A, and **MD Delp**. Effects of hindlimb unweighting on the mechanical and structural properties of the rat aorta. *J. Appl. Physiol.* 94: 439-445, 2003.
50. Fogarty, JA, JM Muller-Delp, **MD Delp**, ML Mattox, MH Laughlin, and JL Parker. Exercise training enhances vasodilation to VEGF in porcine coronary arterioles exposed to chronic coronary occlusion. *Circulation* 109:664-670, 2004.
51. Behnke, BJ, **MD Delp**, P McDonough, SA Spier, DC Poole, and TI Musch. Effects of chronic heart failure on microvascular oxygen exchange dynamics in muscles of contrasting fiber type. *Cardiovasc. Res.* 61: 325-332, 2004.
52. Spier, SA, **MD Delp**, CJ Meininger, AJ Donato, MW Ramsey, and JM Muller-Delp. Effects of ageing and exercise training on endothelium-dependent vasodilatation and structure of rat skeletal muscle arterioles. *J. Physiol.* 556: 947-958, 2004.
53. Mattson, JP, **MD Delp**, and DC Poole. Differential effects of emphysema on skeletal muscle fibre atrophy in hamsters. *Eur. Resp. J.* 23: 703-707, 2004.
54. Gashev, AA, MJ Davis, **MD Delp** and DC Zawieja. Regional variations in lymphatic contractile activity in rats. *Microcirc.* 11: 477-492, 2004.
55. Korzick, DH, JC Hunter, MK McDowell, **MD Delp**, MM Tickerhoof, and LD Carson. Chronic exercise improves myocardial inotropic reserve capacity through  $\alpha_1$ -adrenergic and PKC-dependent effects in senescent rats. *J. Gerontol. A-Biol. Sci. Med. Sci.* 59: 1089-1098, 2004.
56. Donato, AJ, LA Lesniewski, and **MD Delp**. The effects of aging and exercise training on endothelin-1 vasoconstrictor responses in rat skeletal muscle arterioles. *Cardiovasc Res.* 66: 393-401, 2005.
57. Wilkerson, MK, LA Lesniewski, EM Golding, RM Bryan, A Amin, E Wilson, and **MD Delp**. Simulated microgravity enhances cerebral artery vasoconstriction and vascular resistance through an endothelial nitric oxide mechanism. *Am. J. Physiol. Heart Circ. Physiol.* 288: H1652-H1661, 2005.
58. Behnke, BJ, **MD Delp**, PJ Dougherty, TI Musch, and DC Poole. Effects of aging on microvascular oxygen pressures in rat skeletal muscle. *Resp. Physiol. Neurobiol.* 146: 259-268, 2005.
59. Starnes, JW, AM Choilawala, RP Taylor, MJ Nelson, and **MD Delp**. Myocardial heat shock protein 70 expression in young and old rats after identical exercise programs. *J. Gerontol. A-Biol. Sci. Med. Sci.* 60: 963-969, 2005.
60. Behnke, BJ, D Padilla, LF Ferreira, **MD Delp**, TI Musch, and DC Poole. Effects of arterial hypotension on microvascular oxygen exchange in contracting skeletal muscle. *J. Appl. Physiol.* 100: 1019-1026, 2006.
61. Gashev, AA, **MD Delp**, and DC Zawieja. Inhibition of active lymph pump by simulated microgravity in rats. *Am. J. Physiol. Heart Circ. Physiol.* 290: H2295-H2308, 2006.
62. Prisby, RD, MK Wilkerson, EM Golding, RM Bryan, E Wilson, and **MD Delp**. Endothelium-dependent vasodilation of cerebral arteries is altered with simulated microgravity through nitric oxide synthase and EDHF mechanisms. *J. Appl. Physiol.* 101: 348-353, 2006.
63. Behnke, BJ, RD Prisby, LA Lesniewski, AJ Donato, HM Olin, **MD Delp**. Effects of ageing and physical activity on vascular morphology in rat skeletal muscle. *J. Physiol.* 575: 617-626, 2006.

64. Donato, AJ, LA Lesniewski, and **MD Delp**. Ageing and exercise training alter adrenergic vasomotor responses of rat skeletal muscle arterioles. *J. Physiol.* 579: 115-125, 2007.
65. Spier, SA, **MD Delp**, JN Stallone, JM Dominguez, and JM Muller-Delp. Exercise training enhances flow-induced vasodilation in skeletal muscle resistance arteries of aged rats: Role of PGI<sub>2</sub> and NO. *Am. J. Physiol. Heart Circ. Physiol.* 292: H3119-H3127, 2007.
66. Prisby, RD, MW Ramsey, BJ Behnke, JM Dominguez, AJ Donato, MR Allen, and **MD Delp**. Aging reduces skeletal blood flow, endothelium-dependent vasodilation and nitric oxide bioavailability in rats. *J. Bone Min. Res.* 22: 1280-1288, 2007.
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68. Ramsey, MW, BJ Behnke, RD Prisby, and **MD Delp**. Effects of aging on adipose resistance artery vasoconstriction: Possible implications for orthostatic blood pressure regulation. *J. Appl. Physiol.* 103: 1636-1643, 2007.
69. Behnke, BJ, **MD Delp**, DC Poole, and TI Musch. Aging potentiates the effects of congestive heart failure on muscle microvascular oxygenation. *J. Appl. Physiol.* 103: 1757-1763, 2007.
70. **Delp, MD**, BJ Behnke, SA Spier, G Wu and JM Muller-Delp. Ageing diminishes endothelium-dependent vasodilatation and tetrahydrobiopterin content in rat skeletal muscle arterioles. *J. Physiol.* 586: 1161-1168, 2008.
71. Prisby, RD, JM Muller-Delp, **MD Delp**, and TR Nurkiewicz. Age, gender and hormonal status modulate the vascular toxicity of the diesel exhaust extract phenanthraquinone. *J. Toxicol. Environ. Health Part A: Current Issues.* 71: 464-470, 2008.
72. Behnke, BJ, DC Zawieja, AA Gashev, CA Ray, and **MD Delp**. Diminished mesenteric vaso- and venoconstriction and elevated plasma ANP and BNP with simulated microgravity. *J. Appl. Physiol.* 104: 1273-1280, 2008.
73. Lesniewski, LA, AJ Donato, BJ Behnke, CR Woodman, MH Laughlin, CA Ray, and **MD Delp**. Decreased NO signaling leads to enhanced vasoconstrictor responsiveness in skeletal muscle arterioles of the ZDF rat prior to overt diabetes and hypertension. *Am. J. Physiol. Heart Circ. Physiol.* 294: H1840-H1850, 2008.
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75. Prisby, RD, JM Swift, SA Bloomfield, HA Hogan, and **MD Delp**. Altered bone mass, geometry, and mechanical properties during development and progression of Type 2 diabetes in the Zucker diabetic fatty rat. *J. Endocrinol.* 199: 379-388, 2008.
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  92. Stabley, JN, NC Moningka, BJ Behnke, and **MD Delp**. Exercise training augments regional bone and marrow blood flow during exercise. *Med. Sci. Sports Exerc.* 46: 2107-2112, 2014.

93. Stabley, JN, RD Prisby, BJ Behnke, and **MD Delp**. Type 2 diabetes alters bone and marrow blood flow and vascular control mechanisms in the ZDF rat. *J. Endocrinol.* 225: 47-58, 2015.
94. Sofronova, SI, OS Tarasova, D Gaynullina, AA Borzykh, BJ Behnke, JN Stabley, DJ McCullough, JJ Maraj, M Hanna, JM Muller-Delp, OL Vinogradova, and **MD Delp**. Spaceflight on the Bion-M1 biosatellite alters cerebral artery vasomotor and mechanical properties in mice. *J. Appl. Physiol.* 118: 830-838, 2015.
95. Ghosh, P, FR Mora Solis, JM Dominguez, SA Spier, AJ Donato, **MD Delp**, and JM Muller-Delp. Exercise training reverses aging-induced impairment of the myogenic response in skeletal muscle arterioles. *J. Appl. Physiol.* 118: 904-911, 2015.
96. Prisby, RD, BJ Behnke, MR Allen, and **MD Delp**. Effects of skeletal unloading on the vasomotor properties of the rat femur principal nutrient artery. *J. Appl. Physiol.* 118: 980-988, 2015.
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98. Ghosh, P, JN Stabley, BJ Behnke, MR Allen, and **MD Delp**. Effects of spaceflight on the murine mandible: Possible factors mediating skeletal changes in non-weight bearing bones of the head. *Bone* 83: 156-161, 2016.
99. Prisby, RD, JS Alwood, BJ Behnke, JN Stabley, DJ McCullough, P Ghosh, RK Globus, and **MD Delp**. Effects of hindlimb unloading and ionizing radiation on skeletal muscle resistance artery vasodilation and its relation to cancellous bone in mice. *J. Appl. Physiol.* 120: 97-106, 2016.
100. Ghosh, P, BJ Behnke, JN Stabley, CR Kilar, Y Park, A Narayanan, JS Alwood, Y Shirazi-Fard, A-S Schreurs, RK Globus, and **MD Delp**. Effects of high-LET radiation exposure and hindlimb unloading on skeletal muscle resistance artery vasomotor properties and cancellous bone microarchitecture in mice. *Radiat. Res.* 185: 257-266, 2016.
101. **Delp, MD**, JM Charvat, CL Limoli, RK Globus, and P Ghosh. Apollo lunar astronauts show higher cardiovascular disease mortality: Possible deep space radiation effects on the vascular endothelium. *Sci. Rep.* 6: 29901, 2016.
102. Hotta, K, B Chen, BJ Behnke, P Ghosh, JN Stabley, JA Bramy, JL Sepulveda, **MD Delp**, and JM Muller-Delp. Exercise training reverses age-induced diastolic dysfunction and restores coronary microvascular function. *J. Physiol.* In press.
103. Muller-Delp, JM, K Hotta, B Chen, BJ Behnke, JJ Maraj, **MD Delp**, TR Lucero, JA Bramy, DB Alarcon, HE Morgan, MR Cowan, and AD Haynes. Effects of age and exercise training on coronary microvascular smooth muscle phenotype and function: role of adiponectin. Submitted.

#### Invited Refereed Reviews:

1. McAllister, RM, **MD Delp** and MH Laughlin. Thyroid status and exercise tolerance: Cardiovascular and metabolic considerations. *Sports Med.* 20: 189-198, 1995.
2. McAllister, RM, **MD Delp**, and MH Laughlin. A review of effects of hypothyroidism on vascular transport in skeletal muscle during exercise. *Can. J. Appl. Physiol.* 22: 1-10, 1997.
3. Brown, R, **MD Delp**, S Lindstedt, LR Rhomberg, and RP Beliles. Physiological parameter values for physiologically based pharmacokinetic models. *Toxicol. Industrial Health* 13: 407-484, 1997.

4. **Delp, MD**, and DS O'Leary. Integrative control of the skeletal muscle microcirculation in the maintenance of arterial pressure during exercise. *J. Appl. Physiol.* 97: 1112-1118, 2004.
5. Mahar, MT, TR Hall, **MD Delp**, JR Morrow Jr. The state of online education in kinesiology in the United States. *Kinesiology Review* 3: 177-185, 2014.

#### Symposium Proceedings:

1. **Delp, MD**. Effects of exercise training on endothelium-dependent peripheral vascular responsiveness. *Med. Sci. Sports Exerc.* 27: 1152-1157, 1995.
2. **Delp, MD**. Differential effects of training on the control of skeletal muscle perfusion. *Med. Sci. Sports Exerc.* 30: 361-374, 1998.
3. **Delp, MD**, and MH Laughlin. Regulation of skeletal muscle perfusion during exercise. *Acta Physiol. Scand.* 162: 411-419, 1998.
4. **Delp, MD**. Control of skeletal muscle perfusion at the onset of dynamic exercise. *Med. Sci. Sports Exerc.* 31: 1011-1019, 1999.

#### Book Chapters:

1. Laughlin, MH, RM McAllister and **MD Delp**. Physical activity and the microcirculation in cardiac and skeletal muscle. In *Physical Activity, Fitness, and Health: The International Proceedings and Consensus Statement*. C Bouchard, RJ Shephard, and T Stephens (Eds.). Champaign IL.: Human Kinetics Publishers, p. 302-319, 1994.
2. McAllister, RM, **MD Delp**, and MH Laughlin. Endothelium-derived nitric oxide and control of blood flow during exercise. In *Pharmacology in Exercise and Sports*. SM Somani (Ed.). Boca Raton, FL.: CRC Press, p. 191-209, 1996.
3. Laughlin, MH, RM McAllister and **MD Delp**. Heterogeneity of blood flow in striated muscle. In *The Lung: Scientific Foundations (2<sup>nd</sup> Edition)*. RG Crystal, JB West, ER Weibel and PJ Barnes (Eds.). Philadelphia: Lippincott-Raven Publishers, p. 1945-1955, 1997.
4. **Delp, MD**. Microgravity-induced orthostatic intolerance: An arterial microvascular mechanism. In *Adaptation Biology and Medicine (Vol. 3)*. J Moravec, N Takeda and PK Singal (Eds.). New Delhi, India: Narosa Publishing House, p. 144-155, 2002.
5. Frisbee, JC, and **MD Delp**. Vascular function in the metabolic syndrome and the effects on skeletal muscle perfusion: lessons from the obese Zucker rat. In: *Essays in Biochemistry: The Biochemical Basis of the Health Effects of Exercise (Vol. 42)*. AJM Wagenmakers, (Ed.). London, UK: Portland Press, Inc., p. 145-161, 2006.
6. **Delp, MD**. Cardiovascular/Cardiopulmonary Introduction. In: *Translational Cell and Animal Research in Space 1965-2011*. AE Ronca, KA Souza, and RC Mains (Eds.). Hanover, MD: NASA Center for AeroSpace Information, p. 110-112, 2015.

#### Letters to the Editor:

1. **Delp, MD**, and RB Armstrong. Is glycogen depletion related to muscular activity? *J. Appl. Physiol.* 65:490-491, 1988.

2. Papadopoulos, A, and **MD Delp**. Vascular adaptation to microgravity (Reply). *J. Appl. Physiol.* 97: 1585-1587, 2004.
3. **Delp, MD**, OL Vinogradova, and OS Tarasova. Effects of spaceflight on the cerebral circulation (Reply). *J. Appl. Physiol.* 119: 1244, 2015.

#### Invited Editorials:

1. **Delp, MD**. Arterial adaptations in microgravity contribute to orthostatic tolerance. *J. Appl. Physiol.* 102: 836, 2007.
2. **Delp, MD**. Unraveling the complex web of impaired wound healing with mechanical unloading and physical deconditioning. *J. Appl. Physiol.* 104: 1262-1263, 2008.

### INVITED PRESENTATIONS

1. Control of muscle blood flow at rest and during exercise. SEMINAR: Department of Biology, Marquette University, Milwaukee, Wisconsin, March 30, 1990.
2. Distribution of cardiac output at rest and during exercise. SEMINAR: Pharmacokinetics Branch, Environmental Toxicology Division, Environmental Protection Agency, Research Triangle Park, North Carolina, February 20, 1992.
3. Cardiovascular response to exercise. SEMINAR: International Society for Clinical Laboratory Technology, Lake of the Ozarks, Missouri, April 26, 1992.
4. Effect of chronic low-frequency stimulation on muscle fiber transformation: Clinical implications for cardiac assist. SEMINAR: Department of Biological Science, Duquesne University, Pittsburgh, Pennsylvania, November 19, 1993.
5. Effects of exercise training and inactivity on endothelial control of peripheral blood flow. SYMPOSIUM: Endothelial-Mediated Control of Coronary and Skeletal Muscle Blood Flow During Exercise. American College of Sports Medicine, Indianapolis, Indiana, June 2, 1994.
6. Peripheral vascular adaptations to physical training and detraining. SEMINAR: Department of Pharmacology and Toxicology and Department of Exercise Science, University of Georgia, Athens, Georgia, November 17, 1994.
7. Effects of exercise training on endothelium-dependent peripheral vascular responsiveness. SEMINAR: Cardiovascular Disease Prevention Program, Cardiology Division, University of Pittsburgh, Pittsburgh, Pennsylvania, December 9, 1994.
8. Arterial vascular adaptations induced by exercise training. SEMINAR: Department of Exercise and Movement Science, University of Oregon, Eugene, Oregon, February 20, 1995.
9. Skeletal muscle fiber transformation: The effects of physical activity. SEMINAR: Department of Anatomy and Physiology, College of Veterinary Medicine, Kansas State University, Manhattan, Kansas, April 17, 1995.
10. Adaptation in skeletal muscle perfusion induced by exercise training. SYMPOSIUM: Adaptations and Control of Blood Flow with Exercise Training. American College of Sports Medicine, Cincinnati, Ohio, June 1, 1996.
11. Regulation of skeletal muscle perfusion during exercise. SYMPOSIUM: Muscle Performance: Fatigue, Recovery and Trainability. Sponsored by *Acta Physiologica Scandinavica*. Gålå, Norway, March 2, 1997.
12. Cardiovascular dynamics and the control of muscle blood flow at the onset of exercise. SYMPOSIUM: Cardiovascular Dynamics at the Onset of Exercise. American College of Sports Medicine, Denver, Colorado, May 28, 1997.
13. Functional consequences of arterial remodeling induced by simulated microgravity. SEMINAR: Department of Anatomy and Physiology, College of Veterinary Medicine, Kansas State University, Manhattan, Kansas, October 22, 1998.
14. Microgravity-induced orthostatic intolerance: A possible microvascular mechanism. SYMPOSIUM: Adaptations to Microgravity Changes. Sixth Congress of the International Society for Adaptive Medicine.

- Lyon, France, September 2, 2000.
15. Microgravity-induced orthostatic intolerance and deconditioning: An arterial microvascular mechanism. SEMINAR: Section of Leukocyte Biology, Department of Pediatrics, Baylor College of Medicine, Houston, Texas, March 6, 2001.
  16. Nitric oxide and the control of skeletal muscle blood flow. FEATURED TOPIC: APS Environmental & Exercise Physiology Section. Experimental Biology, Orlando, Florida, April 3, 2001.
  17. Space exploration: Expanding our understanding of the human body on earth. LECTURE TOUR: Sponsored by the Texas Chapter of the American College of Sports Medicine, Texas Tech University, April 11; University Texas-Tyler, April 16; University Texas-Arlington, April 18; Southwestern University, April 20; Texas Lutheran University, April 20, 2001.
  18. Effects of exercise training on microvascular control of skeletal muscle blood flow. LECTURE TOUR: Sponsored by the Texas Chapter of the American College of Sports Medicine, Institute for Exercise and Environmental Medicine, Presbyterian Hospital and University Texas Southwestern Medical Center, April 17; University North Texas Health Science Center, April 19, 2001.
  19. Cardiovascular adaptations to deconditioning: Animal models. SYMPOSIUM: Cardiovascular Adaptations to Deconditioning. American College of Sports Medicine, Baltimore, Maryland, June 1, 2001.
  20. The effects of aging on vascular function in skeletal muscle. PROGRAM TOPIC: Exercise for the Ages: New Perspectives on Exercise and Aging. Texas Chapter of the American College of Sports Medicine, Georgetown, Texas, February 15, 2002.
  21. Differences in vascular structure and function from muscles composed of varying fiber type. SYMPOSIUM: Control of Vascular Function in Health and Disease. American College of Sports Medicine, St. Louis, Missouri, June 1, 2002.
  22. Vascular remodeling: A possible mechanism for microgravity-induced orthostatic intolerance. SEMINAR: Exercise Biology Program, University California-Davis, Davis, California, December 9, 2002.
  23. Simulated microgravity induces arterial vascular remodeling in skeletal muscle. SEMINAR: Department of Cell Biology, Neurobiology and Anatomy, Medical College Wisconsin, Milwaukee, Wisconsin, April 3, 2003.
  24. Skeletal perfusion with simulated microgravity: A possible mechanism for bone remodeling. SYMPOSIUM: Adaptations to Space. Seventh Congress of the International Society for Adaptive Medicine. San Diego, California, August 23, 2003.
  25. Simulated microgravity alters vasomotor responsiveness of cerebral arteries. SYMPOSIUM: Adaptations to Space. Seventh Congress of the International Society for Adaptive Medicine. San Diego, California, August 23, 2003.
  26. The effects of aging and exercise training on endothelium-dependent vasodilation in skeletal muscle. SEMINAR: Noll Laboratory and Department of Kinesiology, Pennsylvania State University, University Park, PA, September 19, 2003.
  27. The effects of aging and exercise training on endothelium-dependent vasodilation in skeletal muscle. SEMINAR: Department of Kinesiology, College of Applied Health Sciences, University of Waterloo, Ontario, Canada, March 3, 2004.
  28. Vascular remodeling: Possible mechanism of microgravity-induced orthostatic intolerance. SEMINAR: Department of Kinesiology, College of Applied Health Sciences, University of Waterloo, Ontario, Canada, March 4, 2004.
  29. The pervasive effects of microgravity on the cardiovascular system: The necessity of animal research. WORKSHOP PRESENTATION: Animal Research in Support of Human Space Exploration. Woods Hole, Massachusetts, April 15, 2004.
  30. Hydrostatic gradients and distribution of the vascular resistance. SYMPOSIUM: Cardiovascular Adaptation to Space Flight: State of the Art and Future Directions. A special symposium to honor C. Gunnar Blomqvist. University Texas Southwestern Medical Center, Dallas, Texas, May 18, 2004.
  31. Evidence against rapid vasodilation. SYMPOSIUM: Immediate Exercise Hyperemia: Contributions of the Muscle Pump vs. Rapid Vasodilation. American College of Sports Medicine, Indianapolis, Indiana, June 3, 2004.
  32. The effects of aging and exercise training on vasomotor control mechanisms in skeletal muscle. SEMINAR: Department of Exercise and Sport Science, East Carolina University, Greenville, North Carolina, November 2, 2004.
  33. Circulatory remodeling with simulated microgravity. Bioastronautics Investigators' Workshop. Galveston, Texas, January 11, 2005.
  34. Microvascular alterations with aging and exercise training in skeletal muscle. SEMINAR: Division of

- Exercise Physiology, West Virginia University School of Medicine, March 21, 2005.
35. Venous pressure-volume characteristics: Implications for orthostatic tolerance. SYMPOSIUM: The Venous System: An Overlooked Yet Critical Player of Cardiovascular Function. American College of Sports Medicine, Denver, Colorado, June 2, 2006.
  36. Skeletal perfusion and vascular biology as a mechanism for bone remodeling with microgravity. SYMPOSIUM: Adaptation to Extreme Conditions (Microgravity). Eighth Congress of the International Society for Adaptive Medicine, Moscow, Russia, June 22, 2006.
  37. Disuse Osteoporosis: Astronauts and You. SEMINAR: Department of Applied Health Sciences, Wheaton College, Wheaton, IL, September 27, 2006.
  38. Aging, bone blood flow and osteoporosis. SYMPOSIUM: Muscle and bone blood flow. Mid-Atlantic Regional Chapter of the American College of Sports Medicine, Harrisburg, Pennsylvania, November 11, 2006.
  39. Aging and osteoporosis: Is there a blood flow and vascular coupling mechanism involved. SEMINAR: Department of Applied Physiology and Kinesiology, University of Florida, March 5, 2007.
  40. Aging, exercise training and the endothelium in skeletal muscle arterioles. SYMPOSIUM: Endothelial Aging. The Physiological Society, Cambridge University, Cambridge, UK, July 15, 2008.
  41. Regional alterations in vascular function and structure with simulated microgravity. SYMPOSIUM: Gravity Induced Vascular Remodeling. International Society for Gravitational Physiology, Fourth Military Medical University, Xi'an, China, May 26, 2009.
  42. Functional impairment of visceral vasoconstriction may contribute to microgravity-induced orthostatic intolerance. SYMPOSIUM: Adaptation in Microgravity and Environmental Stress. International Society for Adaptive Medicine, Taipei, Taiwan, Aug. 3, 2009.
  43. Innovative strategies for funding instructional and research programs: Making the most of a tough situation. American Kinesiology Association Leadership Conference, Dallas, TX, Feb. 1, 2010.
  44. Coupling of old age-induced cardiovascular dysfunction and osteoporosis. BASIC SCIENCE LECTURE. Southeast Chapter of the American College Sports Medicine, Greenville, SC, Feb. 12, 2010.
  45. Alterations in skeletal perfusion and vascular signaling with unloading: A possible mechanism for bone loss. SYMPOSIUM: Spaceflight Environment: Accelerated Skeletal Aging and Cancer? American Society for Gravitational and Space Biology, National Harbor, MD, Nov. 6, 2010.
  46. Vascular adaptations to microgravity: Experimental challenges for understanding this harsh environment. SYMPOSIUM: Stress Physiology. Mid-Atlantic Regional Chapter of the American College of Sports Medicine, Harrisburg, Pennsylvania, November 4, 2011.
  47. Arteriolar remodeling induced by changes in flow and pressure in a model of skeletal muscle disuse. SYMPOSIUM: Physiological Remodeling of Resistance Arteries. Experimental Biology, San Diego, California, April 24, 2012.
  48. Regional vascular alterations induced by microgravity: Implications for astronaut health and future studies. SEMINAR: Institute of Biomedical Problems, Russian Academy of Science, Moscow, Russia, June 15, 2012.
  49. Alterations in skeletal perfusion and vascular signaling with unloading: A possible mechanism for bone loss during spaceflight. SEMINAR: Institute of Biomedical Problems, Russian Academy of Science, Moscow, Russia, June 15, 2012.
  50. Spaceflight-induced cardiovascular alterations impair astronaut health: Life lessons from an academic research career. KEYNOTE RAVEN LECTURE: Texas Chapter of the American College of Sports Medicine, Austin, Texas, March 1, 2013.
  51. Association between bone blood flow and altered bone mass. SYMPOSIUM: Bone Vascular Function in Health and Disease. American College of Sports Medicine, Indianapolis, IN, June 1, 2013.
  52. Effects of spaceflight on the functional, mechanical and structural properties of mouse cerebral arteries. SYMPOSIUM: Unraveling the VIIP Etiology – An Exploratory Symposium. National Space Biomedical Research Institute, Houston, TX, February 10, 2014.
  53. Microgravity-induced cardiovascular alterations: More than meets the eye. SYMPOSIUM: International Space Station Research Results and Opportunities. Experimental Biology, San Diego, California, April 30, 2014.
  54. Association between bone blood flow and bone properties. SEMINAR: Division of Sport Science and Physical Education, Tsinghua University, Beijing, China, October 27, 2014.
  55. Effects of aging and spaceflight on bone and marrow blood flow. SEMINAR: Beijing Sport University, Beijing, China, October 30, 2014.
  56. Physical activity and aging: Implications for musculoskeletal blood flow and health. KEYNOTE ADDRESS:



- International Conference on Sport Science and Technology. Hunan University, Changsha, China, November 1, 2014.
57. Effects of spaceflight on regional adaptations in arterial and venous function. SYMPOSIUM: Adaptations to Microgravity. International Society for Adaptive Medicine, Yonago, Japan, May 29, 2015.
  58. Effects of short-term spaceflight on regional vascular responsiveness in mice. SYMPOSIUM: Mice in Space. International Society for Gravitational Physiology, Ljubljana, Slovenia, June 10, 2015.
  59. Effects of heavy ion radiation and hindlimb unloading on skeletal muscle microvascular function. SYMPOSIUM: Radiation Endotheliology. Radiation Research Society, Weston, Florida, September 19, 2015.
  60. Potential vascular mechanisms underlying spaceflight-induced orthostatic hypotension and visual impairment. SEMINAR: University of Tsukuba, Tsukuba, Japan, October 29, 2015.
  61. Regional alterations in vascular responsiveness induced by spaceflight and hindlimb unloading in rats and mice. PLENARY SESSION: Gravity and the Cardiovascular System: Uses of Different Models. International Society for Gravitational Physiology and European Life Sciences Symposium, Toulouse, France, June 7, 2016.
  62. Evidence for increased risk of cardiovascular disease following deep space travel among Apollo lunar astronauts: Possible radiation effects on the vascular endothelium. Johnson Space Center Risk Board, Houston, TX, August 11, 2016.
  63. Evidence that deep space travel adversely affects astronaut cardiovascular health. PRESIDENT'S PLENARY SYMPOSIUM: New Approaches to Translational Space Medicine. American Society for Gravitational and Space Research, Cleveland, OH, October 26, 2016.
  64. Cardiovascular health: A potential hurdle in the upcoming space race. 2017 Distinguished Lecture Series, Texas A&M University, College Station, TX, April 13, 2017.
  65. Acute and chronic effects of heavy ion radiation and hindlimb unloading on microvascular function in mice. Space Life Sciences seminar, Texas A&M University, College Station, TX, April 14, 2017.
  66. Cardiovascular health: A potential hurdle in the upcoming space race. Keynote Speaker, Drs. Robert and Lois Ellison Lecture, Augusta University, Augusta, GA, April 28, 2017.

## TEACHING EXPERIENCE

### Duquesne University

- †BIO 455/555 Cardiovascular and Respiratory Physiology (team taught)

### University Pittsburgh

- \*HRP 2302 Advanced Musculoskeletal Sciences (team taught)

### Texas A&M University and Texas A&M Health Science Center

- HLTH 410 Exercise and Health
- KINE 433 Physiology of Exercise
- \*KINE 637 Physiology of Exercise I (Metabolism, Neuromuscular)
- \*KINE 638 Physiology of Exercise II (Cardiorespiratory)
- \*KINE 648 Instrumentation and Techniques in Exercise Physiology (team taught)
- \*MSCI 689 Cardiovascular Sciences (Medical Physiology course, team taught)

### West Virginia University School of Medicine

- \*EXPH 791 Advanced Topics Course: Aging and Skeletal Muscle Perfusion
- \*EXPH 791 Advanced Exercise Physiology I (Cardiorespiratory, team taught)
- \*EXPH 791 Advanced Exercise Physiology II (Musculoskeletal, team taught)
- \*CCMD 793 Special Topics Course: Cardiovascular and Respiratory Biology (team taught)

### University of Florida

- \*APK 7108 Environmental Stress and Exercise Physiology (team taught)

**Florida State University**

- \*HOE 6366 Research Best Practices in Human Sciences

†Dual undergraduate and graduate course; \*Graduate course

**STUDENT/POSTDOCTORAL ADVISEMENT**

*Name, dates, degree(s), current status, bulleted honors while under advisement*

**Scott A. Spier**, 1996-2003, M.A., Ph.D., Associate Professor, University Texas-Tyler

- Distinguished Graduate Student Masters Research Award, Association of Former Students, Texas A&M University, 1999
- Student Research Development Award, Texas Chapter of the American College of Sports Medicine, 2000
- Second Place Research Presentation Award, doctoral student category, Texas Chapter of the American College of Sports Medicine, 2001
- Third Place Research Presentation Award, doctoral student category, Texas Chapter of the American College of Sports Medicine, 2002
- APS Proctor and Gamble Award in the Environmental and Exercise Physiology Section for the abstract, "Mechanisms of Enhanced Flow-Induced Dilation of Skeletal Muscle Arterioles: Effects of Age and Training," Experimental Biology Conference, 2003
- APS Cardiovascular Section Young Investigator Travel Award for the abstract, "Effects of Age and Exercise Training on Myogenic Responsiveness of Skeletal Muscle Arterioles," Experimental Biology Conference, 2003
- Dissertation manuscript (Spier et al. *J. Physiol.* 556: 947-958, 2004) was published with an editorial commentary (Dinno, *J. Physiol. (London)* 556: 673, 2004)

**Todd A. Miller**, 1996-2001, Ph.D. & Postdoctoral fellow, Associate Professor, George Washington University Medical Center

- Second Place Student Research Manuscript Award, "Age-Related Alterations in the Extracellular Matrix of Rat Skeletal Muscle," Texas Chapter of the American College of Sports Medicine, 2000
- Carl V. Gisolfi Student Award for Research, "Simulated Microgravity Induces Alterations in Skeletal Muscle Collagen," American Physiological Society (APS) Conference: The Integrative Biology of Exercise, 2000
- APS Recognition Award in the Environmental and Exercise Physiology Section for the abstract, "Hindlimb Unloading Diminishes Bone Blood Flow During Reloading in the Rat," Experimental Biology Conference, 2001

**M. Keith Wilkerson**, 1996-2002, Ph.D., Development Officer, Middlebury College

- First Place Research Presentation Award, doctoral student category, Texas Chapter of the American College of Sports Medicine, 1998
- Awarded NASA Space Physiology Research Grant through the American College of Sports Medicine Foundation (One of three awarded nationally), 1998
- Second Place Research Presentation Award, doctoral student category, American Society for Gravitational and Space Biology, 1998
- Awarded an American College of Sports Medicine Foundation Research Grant, 1999
- Second Place Research Presentation Award, doctoral student category, Texas Chapter of the American College of Sports Medicine, 2000
- Second Place Student Research Manuscript Award, "Head-Down Tail-Suspension Alters Luminal Shear Stress Contractility of Rat Middle Cerebral Arteries," Texas Chapter of the American College of Sports Medicine, 2002
- APS Recognition Award in the Environmental and Exercise Physiology Section for the abstract, "Head-Down Tail-Suspension Alters Vasomotor Responses of Middle Cerebral Arteries," Experimental Biology Conference, 2002

**Patrick N. Colleran**, 1996-2002, Ph.D., Deceased

- Awarded NASA Space Physiology Research Grant through the American College of Sports Medicine Foundation (One of three awarded nationally), 1998
- First Place Student Research Manuscript Award, "Simulated Microgravity Decreases Perfusion of Unloaded Bones," Texas Chapter of the American College of Sports Medicine, 2000
- Dissertation manuscript (Colleran et al. *Am. J. Physiol. Reg. Int. Comp. Physiol.* 294, 2008) was published with an editorial commentary (Ray, *Am. J. Physiol. Reg. Int. Comp. Physiol.* 294: R1575-R1576, 2008)

**Matthew R. McCurdy**, 1998-2000, Undergraduate Honors Thesis, Oncology Resident - Baylor College Medicine

- Third Place in the Engineering Scholars Program Undergraduate Poster Competition, Dwight Look College of Engineering, Texas A&M University, 1999
- Honors thesis manuscript (McCurdy et al. *J. Appl. Physiol.* 89, 2000) published with an editorial commentary (*J. Appl. Physiol.* 89: 397, 2000)

**Michael W. Ramsey**, 1998-2005, Ph.D., Associate Professor and Chair, East Tennessee State University

- Third Place Research Presentation Award, doctoral student category, Texas Chapter of the American College of Sports Medicine, 2001
- Second Place Student Research Manuscript Award, "Effects of Head-up Tilt Mean Arterial Pressure and Regional Blood Flow Distribution in Aged Rats," Texas Chapter of the American College of Sports Medicine, 2004

**Lisa A. Lesniewski**, 1999-2003, Ph.D., Assistant Professor, University of Utah School of Medicine

- Student Research Development Award, Texas Chapter of the American College of Sports Medicine, 2001
- Third Place Student Research Manuscript Award, "Endothelial Dysfunction in High Oxidative Skeletal Muscle Arterioles Accompanies Elevated Mean Arterial Pressure in Type 2 Diabetes," Texas Chapter of the American College of Sports Medicine, 2004

**Anthony Papadopoulos**, 2000-2002, M.S., Postdoctoral Fellow, Texas Tech University

- Fourth Place Student Research Manuscript Award, " Hindlimb Unloading-Induced Impairment of Aortic Vasoconstrictor Responsiveness is Not the Result of Enhanced iNOS Activity," Texas Chapter of the American College of Sports Medicine, 2002

**Anthony J. Donato**, 2001-2004, Ph.D., Assistant Professor, University of Utah School of Medicine

- First Place Student Research Manuscript Award, "Effects of Aging and Exercise Training on Vasoconstrictor Responsiveness in Skeletal Muscle Arterioles," Texas Chapter of the American College of Sports Medicine, 2004

**Yoonjung Park**, 2003-2006, Ph.D., Assistant Professor, University Houston

- First Place Research Presentation Award, doctoral student category, Texas Chapter of the American College of Sports Medicine, 2005

**Rhonda D. Prisby**, 2002-2007, Postdoctoral Fellow, Associate Professor, University of Delaware

- APS/NIDDK Minority Travel Award, American Physiological Society for travel and presentation at the Experimental Biology conference, 2003
- APS/NIDDK Minority Travel Award, American Physiological Society for travel and presentation at the Integrative Biology of Exercise conference, 2004
- Second Place Research Presentation Award, professional-in-training category, Texas Chapter of the American College of Sports Medicine, 2005
- APS/NIDDK Minority Travel Award, American Physiological Society for travel and presentation at the Experimental Biology conference, 2006
- National Heart, Lung and Blood Institute Postdoctoral Supplement Recipient, National Institutes of Health, project proposal, "Effects of Age, Gender, and Estrogen Status on the Vasomotor Properties of the Femoral Principal Nutrient Artery, 2006-2007

- Bradley J. Behnke**, 2003-2008, Postdoctoral Fellow, Associate Professor, Kansas State University
- First Place Research Presentation Award, professional-in-training category, Texas Chapter of the American College of Sports Medicine, 2004
  - Third Place Research Presentation Award, professional-in-training category, Texas Chapter of the American College of Sports Medicine, 2005
  - National Institutes of Health NRSA: Vascular Structure and Function with Aging. 2006-2009, \$146,772
  - Behnke et al. manuscript (*J. Appl. Physiol.* 104, 2008) published with an editorial commentary (Schrage, *J. Appl. Physiol.* 104: 1257-1258, 2008)

- John N. Stabley**, 2007-2013, Ph.D., Postdoctoral Fellow, University Texas Southwestern Medical Center
- Allen-Holyoak-Varnes Graduate Scholarship, College Health & Human Performance, University of Florida

**Xindong Ma**, 2008-2009, Postdoctoral fellow, Assistant Professor, Tsinghua University – China

- Freddy Mora**, 2009-2011, M.S., Physical Therapy Doctoral Program, University of Florida
- Fulbright Fellowship, Fulbright Foreign Student Program

- Payal Ghosh**, 2011-2014, Ph.D., University of Florida, 2014-present, Postdoctoral Fellow, Florida State University
- National Space and Biomedical Research Institute's Predoctoral Gravitational Physiology Award from the Environmental and Exercise Physiology Section of the APS, 2014
  - Top presenter in the *Life Sciences* category, 4<sup>th</sup> Annual Postdoctoral Symposium and Poster Competition, Florida State University, 2016

**Xindong Ma**, 2008-2009, Postdoctoral fellow, Assistant Professor, Tsinghua University – China

**Hyerim Park**, 2016-present, Ph.D. in progress

## ACADEMIC SERVICE

### Medical College of Pennsylvania and Hahnemann University

- 1992-95 Institutional Biosafety Committee
- 1993-95 Health Sciences Library Committee

### Texas A&M University

- 1997-00 Faculty Advisory Council to the Dean, Health and Kinesiology (HLKN) Representative
- 1997-00 Dean's Council, College of Education and Human Development (CEHD)
- 1998 HLKN Research/Scholarship Ad Hoc Subcommittee: A-1 Faculty Evaluation Revision
- 1999 Kinesiology Search Committee: Assistant Professor in Sports Pedagogy
- 2000 CEHD Faculty Evaluation Ad Hoc Committee
- 2000 CEHD Interdisciplinary Faculty Grant Review Ad Hoc Committee (Chair)
- 2000 HLKN Graduate Assistant Ad Hoc Committee
- 2000-03 CEHD Research Council
- 2001-05 TAMU Council of Principal Investigators, CEHD Representative
- 2001 HLKN A-1 Faculty Evaluation - Research Subcommittee (Chair)
- 2002 HLKN Graduate Student Admissions Committee
- 2003-05 HLKN Tenure and Promotion Committee
- 2004-05 CEHD Council of Principal Investigators, HLKN Representative (Chair)

### West Virginia University

- 2005-07 School of Medicine Graduate Program Admissions Committee for Biomedical Sciences
- 2005-07 School of Medicine Scientific Advisory Committee
- 2005-07 Department of Human Performance and Applied Exercise Science Promotion and Tenure Committee

- 2005-06 Division Exercise Physiology Professional Ethics Committee
- 2005 Division Exercise Physiology Search Committee: Tenure-track position (Chair)
- 2006 School of Medicine Search Committee: Chair of Biochemistry position

### University of Florida

- 2007-14 College Council, College of Health and Human Performance
- 2007-14 Administrative Council, College of Health and Human Performance
- 2009 Search Committee, Assistant Dean for Distance Education and Outreach, College of Health and Human Performance
- 2009-13 Compensation Committee, UF Faculty Senate
- 2012-13 Search Committee, Director University Writing Program, College of Liberal Arts and Sciences
- 2013-14 Intercollegiate Athletics Committee, UF Presidential Committee

### Florida State University

- 2014 Animal Care Facility Ad-Hoc Working Group
- 2014- Deans Budget Committee
- 2014- Deans Research Committee
- 2014-2015 FSU Hyperion Implementation Steering Committee

## PROFESSIONAL SERVICE

- 1996-97 Standards and Endorsement Committee, American College of Sports Medicine
- 1999 Chaired the Free Communication/Slide Session entitled, "Blood Flow Regulation" at the Annual Meeting of the American College of Sports Medicine, Seattle, WA
- 1999 Chaired the Thematic Poster Session entitled, "Vascular Control Mechanisms" at the Annual Meeting of the American College of Sports Medicine, Seattle, WA
- 2000 Chaired the Free Communication/Slide Session entitled, "VO<sub>2</sub> Kinetics/Regulation of Muscle Blood Flow" at the Annual Meeting of the American College of Sports Medicine, Indianapolis, IN
- 2000 Chaired symposium entitled, "Adaptations to Altered Gravity" at the Sixth Congress of the International Society for Adaptive Medicine, Lyon, France
- 2001 Chaired the Cardiopulmonary Session at the NASA Bioastronautics Investigators' Workshop, Galveston, TX
- 2002-05 Research Review Committee, American College of Sports Medicine
- 2004 NASA Office of Biological and Physical Research Life Sciences Subcommittee: Design Path for the Rodent Habitat for Use on the International Space Station (ISS)
- 2004 Chaired the Free Communication/Slide Session entitled, "Chronic Disease and Skeletal Muscle," Annual Meeting of the American College of Sports Medicine, Indianapolis, IN
- 2004 NASA Office of Biological and Physical Research Life Sciences: Scientific Advisory Group for the ISS Advanced Animal Habitat Preliminary Design Review
- 2005-11 Research Awards Committee, American College of Sports Medicine
- 2011-13 Publications Committee, American Kinesiology Association
- 2013-14 Research and Analysis Committee (Chair), American Kinesiology Association

## ADVISORY BOARDS

- 1998-05 Texas Chapter of the American College of Sports Medicine
- 2001-04 National Space and Biomedical Research Institute Teacher Academy, College of Education, Texas A&M University
- 2001-05 External Advisory Committee, The Space Medicine and Life Sciences Research Center, Morehouse School of Medicine, Atlanta, GA
- 2007-12 National Scientific Advisory Council, American Federation for Aging Research
- 2011-14 NASA Vision Impairment - Intracranial Pressure Research and Clinical Advisory Panel
- 2012-15 Board of Directors, American Kinesiology Association

2012-15 NASA Science Working Group – Wetlab-2 for International Space Station  
 2016-18 Florida Food Safety and Food Defense Council

## COMMUNITY SERVICE

1978 Student Conservation Association, summer volunteer, Rocky Mountain National Park  
 1993 Junior and Senior High School Science Lecture: "Animal Research: Ode to Charlotte."  
 Cheswick Christian Academy, Cheswick, Pennsylvania  
 1994 Seventh Grade Science Assembly Lecture: "Animals and Science: Past, Present and  
 Future." Dorseyville Middle School, Dorseyville, Pennsylvania  
 1997 National Space Biomedical Research Institute (NSBRI) Teacher Academy for High School  
 Biology Teachers, Texas A&M University College of Education: "How Space Travel Can  
 Adversely Affect the Cardiovascular System"  
 1998 Eleventh Annual Science, Technology and Youth Symposium, Texas A&M University: "Rats,  
 Humans and Flying Machines: The Biology of Space Travel."  
 1998 College Station Lions Club, College Station, Texas: "Physiological Adaptations to Space  
 Travel and Old Age: The 'John Glenn' Effect."  
 1998 Fish Anatomy Lab: St. Joseph School, Bryan, Texas  
 1999 Fish Anatomy Lab: Sam Houston Elementary School, Bryan, Texas  
 2001-03 NSBRI Teacher Academy for High School Biology Teachers, Texas A&M University:
 

- Animal Research: A Necessary Evil in Our Pursuit of Space?
- Space Exploration: Cardiovascular Effects
- Space Exploration: Effects on Skeletal Muscle
- Long Duration Spaceflight: Can Our Skeleton Survive the Adventure

 2006-08 School Board Member, Trinity Christian School, Morgantown, West Virginia  
 2008-11 Cub Scout leader, Den 7, Pack 416, Gainesville, FL  
 2009-14 Co-director of church outreach to St. Francis House homeless shelter, Gainesville, FL  
 2011-13 Assistant scoutmaster, Troop 125, Boy Scouts of America, Gainesville, FL  
 2016 Chiles High School Psychology and Earth & Space Science classes: "Biomedical Challenges  
 of Spaceflight."