

CURRICULUM VITAE

Name Russell St John Richardson, Ph.D. D.Sc.

Address

Business: Utah Vascular Research Laboratory (UVRL)
Salt Lake City VAMC,
Bldg 2 Rm 1D25
500 Foothill Drive,
Salt Lake City, UT 84148
(801) 582-1565 ext. 4344
(801) 584-5658 Fax

Personal Information

Date of Birth: April 6, 1965
Place of Birth: Barrow-in-Furness, England.
Marital Status: Married

TRAINING/EXPERIENCE:

1. Academic Preparation

Fellowship: Department of Medicine,
University of California San Diego,
Post Doctoral Fellow (1992-1995)

Graduate: University of Utah, Salt Lake City, UT
Doctor of Philosophy Degree (1992)
Major: Exercise Physiology
Minor: Computer Science
Research Tool: Statistics

Colorado State University, Fort Collins
Master of Science Degree (1989)
Major: Physiology

Loughborough University, England
Post Graduate Certificate of Education (1987)
Major: Biology
Minor: Physical Education

Undergraduate: West London Institute of Higher Education
Bachelor of Arts (1986)
Double Major: Physical Education &
Educational Studies

2. **Honors and Awards**

Research Fellowship, College of Health, University of Utah, Salt Lake City, UT, 1990-1992.

Dr. G. Arthur Brotein Young Scholars Award, Western College Physical Education Society, Washington State University, Pullman, WA, 1991.

N.P. Neilson Scholarship, Department of Exercise and Sport Science, College of Health, University of Utah, Salt Lake City, UT, 1991.

Trisphere Student Award Finalist, South West American College of Sports Medicine, San Diego, CA, 1992.

American Lung Association Research Training Fellowship, 1994-1996.

Parker B. Francis Training Fellowship, 1995-1998.

Journal of Applied Physiology Editorial Board 2000-2002, 2009-present.

Ad Hoc grant reviewer for National Institute of Health, the Canadian Institutes of Health Research, and the Wellcome Trust, 2000-present.

University of Milan, Facoltà di Scienze Motorie, Advisory Board, 2008-present.

Michael J. Joyner Teaching Award, Royal Danish Academy of Cardiovascular Sciences For outstanding teaching in cardiovascular physiology to international trainees, 2010.

American Journal of Physiology, Heart and Circulation Editorial Board, 2011-present.

Sport Sciences for Health Advisory Board, 2012-present.

VA Rehabilitation, Research, and Development, Aging and Degenerative Disease Grant Review Board, standing member 2010-present.

University of Utah, Department of Internal Medicine, Academic Excellence Award, 2013

American Federation for Aging Research, grant review board: National Scientific Advisory Council, 2013-present.

University of Utah, Department of Internal Medicine, Academic Excellence Award, 2014

Goodman Endowed Distinguished Professor of Medicine, Division of Geriatrics, University of Utah 2014-present.

University of Utah, Department of Internal Medicine, Academic Excellence Award, 2015

Senior Research Career Scientist Award Veterans Affairs Rehabilitation Research and Development Service 2015-2022.

University of Utah, Department of Internal Medicine, Academic Excellence Award, 2016

University of Utah, Department of Internal Medicine, Academic Excellence Award, 2017

John Hoidal Department of Internal Medicine Senior Investigator Award, 2018

University of Utah, Department of Internal Medicine, Academic Excellence Award, 2018

Brunel University, London, England, Doctor of Science (D.Sc.), 2018

3. Professional Experience

Employment

	2015 - Present	Senior Research Career Scientist, Salt Lake City VAMC, UT
	2007 - Present	Professor of Medicine, Dept. Medicine, Division of Geriatrics, University of Utah, UT
	2007 - Present	Professor of Exercise and Sport Science, Dept. Exercise and Sport Science, University of Utah, UT
	2007 - Present	Associate Director for Research, Geriatric Research, Education and Clinical Center, Salt Lake City VAMC, UT
2006 - 2008		Professor of Medicine, Dept. of Medicine, UCSD, La Jolla, CA
2000 - 2006		Associate Professor of Medicine, Dept. of Medicine, UCSD, La Jolla
	2003 - 2013	Professor of Medicine, Dept. of Medicine, Norwegian University of Science and Technology
1999 - 2007		Research Scientist VAMC, La Jolla, CA
1996 - 2007		Lecturer, Division of Biology, UCSD, La Jolla, CA
1997- 2000		Assistant Professor of Dept. of Medicine, UCSD, La Jolla, CA
1995-1997		Assistant Research Physiologist, Dept. of Medicine, UCSD, CA
1992-1995		Post Doctoral Fellow, Medicine, UCSD, La Jolla, CA
1992-1992		Visiting Researcher, Tom Landry Sports Medicine Research Center, UT South Western, Dallas, TX
1990-1992		Research Assistant, University of Utah, Salt Lake City, UT
1989-1990		Teaching Assistant, University of Utah, Salt Lake City, UT
1987-1989		Teaching Assistant, Colorado State University,

1986-1987 Fort Collins, CO
High School Biology Teacher, Bluecoats Grammar School
Nottingham, England

Administration

1995-2007 Founder and Director, Oxygen Utilization
Research (OUR) group, UC, San Diego
1995-present Standing Member Retention Promotion and
Tenure Committees, UC San Diego, University of Utah, and External
Review for other institutions.
1998-2004 Seminar Series Coordinator, Division of Physiology, UC, San Diego
2000-present Faculty/Staff Search Committees, UC San Diego,
University of Utah, Salt Lake City VAMC.
2007-present Founder and Director, Utah Vascular Research
Laboratory (UVRL), Salt Lake City VAMC.
2007-present Associate Director for Research, Geriatric
Research, Education and Clinical Center, Salt Lake City, VAMC.
2007-present Center on Aging Advisory Board, University of
Utah.
2007-present College of Health Advisory Committee,
University of Utah.
2007-present Department of Medicine Advisory Committee,
University of Utah.
2009-present Director, Advanced Fellowship in Geriatrics, Salt
Lake City, VAMC.
2010-2014 VA RR&D Aging and Degenerative Disease
Study Section Grant Review Panel
2013-present Air Quality Program, University of Utah.
2015-2016 Chair, VA RR&D Aging and Degenerative
Disease Study Section Grant Review Panel
2015-2016 Chair, VA RR&D Historically Black Colleges and
Universities Research Scientist Training Program Career development
Award 2 Study Section Grant Review Panel
2016-2017 VA RR&D Research Career Scientist Review
panel

4. Journal Reviewer

American Journal of Physiology, Journal of Applied Physiology, Circulation, Circulation
Research, Medicine and Science in Sports and Exercise, Journal of Physiology, Journal of
Clinical Investigation, Journal of Hypertension, Experimental Physiology

TEACHING:

1. Teaching Experience

Sports medicine and exercise physiology (Medical School)
Respiratory physiology (Medical School)
Mammalian physiology (Undergraduate)
Integrative biology of exercise (Undergraduate)
Nutrition (Undergraduate)
Organ Physiology (Graduate)
Laboratory instrumentation (Graduate)
Computer applications (Undergraduate)

2. Mentorship

Past Trainees:

1. Haseler, Luke., Ph.D. 1995-2000

Position: Post Doctoral Fellow

Support: American Heart Association Grant in Aide (Haseler/Richardson),
Tobacco Related Research Program (Haseler/Richardson)

Current Position: Associate Professor, Department of Physiotherapy and Exercise Science, and
Director of Heart Foundation Research Center, Griffith University, Australia

2. Gavin, Timothy, Ph.D. 1998-2000

Position: Post Doctoral Fellow

Support: NIH/NHLBI 5 T32 HL07212-28 (Wagner)

Current Position: Assistant Professor, Department of Kinesiology, East Carolina University

3. Esposito, Fabio, M.D. 1998-2000

Position: Post Doctoral Fellow

Support: NATO (Esposito)

Current Position: Associate Professor, Department of Biomedical Sciences for Health, University of
Milan, Milan, Italy

4. Leek, Bryan, M.D. 1998-2000

Position: Pre Doctoral Fellow

Support: NIH PO1 HL17731-29 Project 3 (Richardson)

Current Position: Orthopedic Surgeon, Sharp Memorial Hospital, San Diego, CA

5. Henderson, Patrick, M.D. 1999-2000

Position: Pre Doctoral Fellow

Support: American Heart Association Grant in Aide (Haseler and Richardson)

Current Position: Orthopedic Surgeon, Children's Orthopedic Specialists, Tucson, Arizona

6. Newcomer, Sean., Ph.D. 1999-2000

Position: Pre Doctoral Fellow

Support: NIH PO1 HL17731-29 Project 3 (Richardson)

Current Position: Assistant Professor, Department of Kinesiology, California State University, San Marcos, CA

7. Hoff, Jan., Ph.D. 1999-2001

Position Post Doctoral Fellow

Support: Norwegian Research Council (Hoff),

NIH PO1 HL17731-29 Project 3 (Richardson)

Current Position: Professor, Department of Medical Imaging, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

8. Poole, Jennifer., D.O. 1999-2000

Position: Pre Doctoral Fellow:

Support: Stein Institute for Aging Research (Richardson)

Current Position: Hospitalist, Virginia Mason Hospital and Seattle Medical Center

9. Bailey, Damian, Ph.D. 2000-2001

Position: Post Doctoral Fellow

Support: UCSD Academic Senate Grant (Richardson),

Stein Institute for Aging Research (Richardson)

Current Position: Professor, Exercise and Sport Science Department, University of Glamorgan.

10. Lawrenson, Lesley, M.D., Ph.D. 2000-2003

Position: Pre Doctoral Fellow

Support: Tobacco Related Disease Research Program (Gavin/Richardson),

UCSD Academic Senate Grant (Richardson)

Current Position: Radiation Oncologist, Ponce De Leon Hospital, San Juan, Puerto Rico

11. Kim, Jeannie, M.D. 2002-2004

Position: Post Doctoral Fellow

Support: NIH/NHLBI 5 T32 HL07212-28 (Wagner)

Current Position: Pulmonary and Critical Care Physician, Paradise Valley Hospital, National City, CA

12. Manu, Uberoi, M.D., 2002-2005

Position: Pre Doctoral Fellow

Support: NIH PO1 HL17731-29 Project 3 (Richardson)

Current Position: Cardiologist, Cedar Sinai Medical Center, West Hollywood, CA

13. Anthony J. Donato, Ph.D. 2004-2005

Position: Postdoctoral Research Fellow

Support: NIH PO1 HL17731-29 Project 3 (Richardson)
Tobacco related Disease Research Program (Gavin/Richardson)
Current Position: Assistant Professor of Medicine and GRECC Investigator, University of Utah and Salt Lake City VAMC, Salt Lake City, UT

14. David Walter Wray, Ph.D. 2004-2007

Position: Post Doctoral Fellow

Support: NIH/NHLBI 5 T32 HL07212-28 (Wagner),

General Clinical Research Center Grant (Wray)

Tobacco Related Disease Research Program 15RT-0100 (Richardson)

Parker B. Francis Fellowship (Wray/Richardson)

Current Position: Associate Professor of Medicine, University of Utah and GRECC Investigator, Salt Lake City VAMC, Salt Lake City, UT

15. Steve Nyshiana, D.O. 2005-2008

Position: Doctoral Candidate

Support: NIH PO1 HL17731-29 Project 3 (Richardson) and Tobacco Related Disease Research Program 15RT-0100 (Richardson)

Current Position: Orthopedic Surgery Resident, Toro University, California

16. Kimberly BerkStresser, M.S. 2006-2008

Position: Pre Doctoral Fellow

Support: Tobacco Related Disease Research Program 15RT-0100 (Richardson)

Current Position: Practitioner of Oriental Medicine, Maryland University of Integrative Health, Baltimore, MD

17. Ryan Harris, Ph.D. 2007-2010

Position: Post Doctoral Fellow

Support: Tobacco Related Disease Research Program 15RT-0100 (Richardson)

Current Position: Assistant Professor, Georgia Regents University, Augusta, GA

18. Vince Tedjasaputra, M.S. 2006-2008

Position: Pre Doctoral Fellow

Support: Tobacco Related Disease Research Program Fellowship 15RT-0100 (Tedjasaputra/Richardson)

Current Position: Ph.D. Student, Faculty of Physical Education and Recreation

19. Markus Amann, Ph.D. 2009-2011

Position: Post Doctoral Fellow

Support: Association Francaise Contre les Myopathies (Richardson), VA Merit Grant (Richardson) and NIH K99 (Richardson)

Current Position: Associate Professor of Medicine, University of Utah and Research Scientist, Salt Lake City VAMC, Salt Lake City, UT

20. John McDaniel, Ph.D. 2007-2011

Position: Post Doctoral Fellow

Support: VA Special Fellowship in Geriatrics (McDaniel/Richardson) and VA Career Development 2 Award (McDaniel)

Current Position: Assistant Professor, Kent State, Ohio; Research Investigator SLC VAMC

21. Anette Fjeldstad, Ph.D. 2007-2011

Position: Post Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and VA Merit Grant (Richardson)

Current Position: Research Associate, Department of Neurology, University of Utah, Salt Lake City, UT

22. Jamie Conklin, M.D. 2009-2011

Position: Pulmonary and Critical Care Fellow

Support: Salt Lake City VAMC Fellowship

Current Position: Pulmonary and Critical Care Physician, Saint Charles Medical Center, Bend, OR

23. Steven Ives, Ph.D. 2008-2013

Position: Pre Doctoral Fellow and Post Doctoral Fellow

Support: Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and VA Advanced Fellowship in Geriatrics

Current Position: Assistant Professor, Health, and Exercise Sciences Department, Skidmore College, Saratoga Springs, NY

24. Joel Trinity, Ph.D. 2009-14

Position: Post Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and VA Advanced Fellowship in Geriatrics

Current Position: Assistant Professor of Medicine, University of Utah and Research Scientist, Salt Lake City VAMC, Salt Lake City, UT

25. Massimo Venturelli, Ph.D. 2011-2013

Position: Post Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and University of Verona Fellowship support

Current position: Assistant Professor, Department of Biomedical Sciences for Health, University of Milan, Milan, Italy

26. Melissa Witman (Hayman), Ph.D. 2008-2015

Position: Pre Doctoral Fellow/Post Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and VA Merit Grant (Richardson)

Current position: Assistant Professor, Dept. of Kinesiology and Applied Physiology, University of Delaware

27. Matt Rossman, M.S. 2010-2015

Position: Pre Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and University of Utah Support: Research Assistant Scholarship

Current position: Post-Doctoral Fellow, Mentor Doug Seals, University of Colorado Boulder

28. Ryan Garten, Ph.D. 2012-2015

Position: Post Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and VA Merit Grant (Richardson)

Current position: Assistant Professor, Dept. of Kinesiology and Health Sciences, Virginia Commonwealth University

29. Song Young Park, M.S. 2011-2015

Position: Pre Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and VA Merit Grant (Richardson)

Current position: Post-Doctoral Fellow, Mentor Noyan Gokce, Boston University

30. Jayson Gifford, M.S. 2011-2015

Position: Pre Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3), VA Merit Grant (Richardson), and SPiRe Grant (Richardson)

Current position: Post-Doctoral Fellow, Mentor Russ Richardson, University of Utah and Salt Lake City VAMC, UT.

31. Jon Groot, M.S. 2010-2015

Position: Pre Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and VA Merit Grants (Richardson)

Current Position: Assistant Professor, University of Utah, Department of Health, Kinesiology, and Recreation, Salt Lake City, UT.

32. Gwenael Layec, Ph.D. 2009-2018

Position: Post Doctoral Fellow and Junior Faculty

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3), VA Merit Grants (Richardson), and SPiRe Grant (Richardson)

Current position: Assistant Professor, Dept. of Kinesiology, University of Massachusetts Amherst, MA

33. Ashley Nelson, M.D. 2013-2018

Position: Pulmonary and Critical Care Fellow/Post Doctoral Fellow and Junior Faculty

Support: University of Utah, Pulmonary Division NIH T32 Training Grant
Current Position: Pulmonary and Critical Care Physician, St Marks Hospital, Salt Lake City, UT

33. Corey Hart, M.S. 2012-2016

Position: Pre Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and VA Merit Grant (Richardson), SPiRe Grant (Richardson)

Current position: Post-Doctoral Fellow, Mentor Ian Lanza, Mayo Clinic, Rochester, Minnesota.

34. Jayson Gifford, Ph.D. 2015-2018

Position: Post Doctoral Fellow

Support: NIH National Institute of Health (P01 HL091830) (Wagner, Richardson Project 3) and VA Merit Grant (Richardson), SPiRe Grant (Richardson)

Current position: Assistant Professor, Department of Exercise Science, Brigham Young University, Provo, UT.

Current Graduate Students:

1. Jay Hydren, M.S. 2015-present

Position: Pre Doctoral Fellow

Support: VA Merit Grants (Richardson), SPiRe Grant (Richardson)

2. Soung Hun, M.S. 2016-present

Position: Pre Doctoral Fellow

Support: VA Merit Grants (Richardson), SPiRe Grant (Richardson)

3. Katherine Shields, M.S. 2017-present

Position: Pre Doctoral Fellow

Support: VA Merit Grants (Richardson)

Current Post Graduate Fellows:

1. Ryan Broxterman, Ph.D. 2015-Present

Position: Post Doctoral Fellow

Support: VA Merit Grant (Richardson), SPiRe Grant (Richardson)

2. Oh Sung Kwon, Ph.D. 2015-Present

Position: Post Doctoral Fellow

Support: VA Merit Grant (Richardson), SPiRe Grant (Richardson)

3. Catherine Jarrett, Ph.D. 2017-Present

Position: Post Doctoral Fellow

Support: VA Merit Grant (Richardson)

4. Valentina Bisconti, Ph.D. 2019-Present
Position: Post Doctoral Fellow
Support: VA Merit Grant (Richardson)

RESEARCH:

1. Grants Awarded:

Johnson, S.C., **Richardson, R.S. (Co-I)**, Seifert, J.G., and White, A.T. Physiological Assessment of the U.S. Ski Team. VISA Gold Medal Program, 1991. (\$5,000).

Seifert, J.G., **Richardson, R.S. (Co-I)**, Johnson, S.C., and White, A.T. Fluid Balance During Alpine Skiing. The Quaker Oats Company, Chicago, Illinois & Snowbird Ski Resort, UT 1991. (\$7,500).

Richardson, R.S. (PI) The Effect of a Triathlon Wet Suit on the Energy Cost of Swimming at a Constant Rate. Body Glove International Ltd, Hermosa Beach, CA, 1992. (\$15,000).

Richardson, R.S. (PI) Gradient from hemoglobin to myoglobin-associated PO₂ in man. American Lung Association of California, Oakland, CA, 1994. (\$28,000).

Richardson, R.S. (PI) Oxygen transport and utilization in health and disease. American lung association, New York, NY, 1995. (\$32,000).

Richardson, R.S. (PI) Limitations to oxygen transport in health and disease. Parker B. Francis Fellowship Foundation, Los Angeles, CA 1995-1998 (\$120,000).

Richardson, R.S. (PI), Poole, D.C. Diaphragm microgeometry and function: Impact of disease. National Institute of Health: Heart and Lung. Program Project (Project # 3) 1995-2000. (\$1,100,000).

Richardson, R.S. (PI) Oxygen transport and utilization: The effect of age. National Institute of Health: Heart and Lung. Program Project (Project # 3) 2000-2006. (\$1,250,000).

Haseler, L.J., **Richardson, R.S. (Co-I)** Skeletal muscle function in Chronic Heart Failure American Heart Association, 1999-2001. (\$120,000).

Gavin, T.P. Wagner, P.D., **Richardson, R.S. (Mentor)** Skeletal muscle structure and function in COPD Tobacco-Related Disease Research Program, 1999-2002. (\$220,000).

Richardson, R.S. (PI) The effect of age on the control of skeletal muscle blood flow and metabolism. UC, San Diego Academic Senate Research Grant, 2001-2002 (\$25,000).

Richardson, R.S. (PI) LX multi-nuclear spectroscopy package. National Institute of Health: Instrumentation Grant, 2000-2002. (\$265,000).

Haseler, L.J., Wagner, P.D., **Richardson, R.S. (Mentor)** Skeletal muscle function in COPD. Tobacco-Related Disease Research Program, 2001-2005. (\$220,000).

Richardson, R.S. (PI) Oxidative stress and vascular function: the role and impact of smoking and COPD. Tobacco Related Disease Research Program. 2006-2009. (\$650,000)

Richardson, R.S. (PI) Oxidative stress and vascular function: the role and impact of smoking and COPD. Tobacco Related Disease Research Program Student Supplement. 2007-2009. (\$30,000).

Richardson, R.S. (PI/Mentor) Statins, Exercise, and Oxidative Stress: an Integrative Approach for Improved Skeletal Muscle Function in Chronic Obstructive Pulmonary Disease Parker B. Francis Fellowship in Pulmonary Research (Wray - Fellow). 2007-2010. (\$250,000).

Richardson, R.S. (PI) MRI Assessment of Skeletal Muscle Perfusion and Metabolic Matching in Humans. Association Francaise contre les Myopathies. 2007-2010. (\$250,000).

Wray, D.W and **Richardson, R.S. (Mentor)** Non-adrenergic regulation of skeletal muscle blood flow in the elderly: a multi-parametric approach. AHA Scientist Development Grant. 2008-2012. (\$220,000)

Richardson, R.S. (PI) Skeletal muscle dysfunction in COPD: The role of oxidative stress. Project 3 Program Project Grant, 2009-2015. (Project 3 - \$2,500,000)

Richardson, R.S. (PI) Oxidative stress links aging, activity, and mobility limitations. VA Merit Grant, 2011-2016. (\$1,100,000)

Richardson, R.S. (PI) Fighting immObility in Rural Veterans with Exercise and Technology (FOR VETs) VA Office of Rural Health, 2009-2011 (\$1,855,000).

McDaniel, J. and **Richardson, R.S. (Mentor)** Muscle Function and Aging: Endogenous and Exogenous Antioxidants VA CDA-2. 2011-2015 (\$625,000)

Amann, M and **Richardson, R.S. (Mentor)** Respiratory muscle work and oxidative stress in COPD: Impact on leg blood flow and fatigue NIH NHLBI K99. 2010-2012 (\$257,000)

Amann, M., and **R.S. Richardson (Co-I)** Respiratory muscle work and oxidative stress in COPD: Impact on leg blood flow and fatigue NIH NHLBI R00. 2013-2016 (\$750,000).

Amann, M., and **R.S. Richardson (Co-I)** Premature Fatigue in Patients with Heart Failure: Neuronal Influences NIH NHLBI R01 2013-2023. (\$2,500,000).

Di Baldassarre, A., F. Schenna, **R.S. Richardson (Co-I)** Impact of physical activity on successful aging: multidisciplinary analysis of mechanisms and outcomes PRIN grant. Progetti di Ricerca di Interesse Nazionale by Ministry of University and Research MIUR a group project with 6 research teams from Chieti, Perugia, Roma La Sapienza, Padova, Roma Foro Italico, and Verona, Italy. 2013-2015. (\$1,050,000).

Richardson R.S. (PI) Rehabilitation for Hypertension: Exercise and skeletal muscle afferent feedback. VA SPiRe Award, 2014-2016 (\$200,000).

Richardson, R.S. (PI) Exercise and Nutrition Directed at CardioVascular Disease in Rural Veterans (END CVD) VA Office of Rural Health, 2013-2015. (\$630,000).

Trinity, J.D. and **R.S. Richardson (mentor)** Understanding the exercise-hypertension paradox: implication for rehabilitation VA CDA2 2014-2019 (\$960,000)

Richardson, R.S. (PI) Passive Leg Movement: A Tool to Assess Vascular Health and Guide Rehabilitation VA Merit Grant, 2015-2020. (\$1,100,000).

Richardson, R.S. (PI) VA Senior Research Career Scientist Award 2015-2022 (\$1,100,000).

Layec, G. and **Richardson, R.S. (Mentor/Co-I)** Nitric oxide coupling and BH4 availability roles in muscle dysfunction with COPD: A Pilot Study FAMRI 2015-2020 (\$500,000).

Layec, G. and **Richardson, R.S. (Mentor/Co-I)** Nitric oxide coupling and BH4 availability roles in muscle dysfunction with COPD NIH NHLBI K99/R00. 2015-2020 (\$758,000).

Zhang, L and **Richardson, R.S. (Co-I)** Stress-rest calf muscle perfusion: a functional diagnostic test for peripheral arterial disease (PAD) NIH NHLBI RO1, 2016-2022 (\$1,813,000).

Richardson, R.S. (PI) Vascular endothelial function: A potential therapeutic target in Alzheimer's Disease VA Merit Grant, 2017-2022. (\$1,100,000).

Richardson, R.S. and M.A. Supiano (**Co-PIs**) Cardiovascular Research Training Program NIH NHLBI T32, 2018-2022 (\$1,500,000).

Drakos, S. and **Richardson, R.S. (Co-I)** Institutional Undergraduate Student Research Fellowship Program in Cardiovascular Research 2018-2021 AHA (\$60,000).

Richardson, R.S. Exercise and Cognitive Function in Alzheimer's Disease Progression: Role of the Vascular Endothelium. NIH R56 2018-2020 (\$450,000)

2. Publications

Articles:

1. **Richardson, R.S.**, Johnson, S.C., and Walker, J.A. (1991). Heart rate and oxygen consumption relationship changes following intense training. Sports Med., Training, and Rehab, 3;105-111.
2. **Richardson, R.S.** & Tucker, A. (1993). Muscular strength capacity and altitude response. Japanese Journal of Physiology. 43;75-85.
3. **Richardson, R.S.**, Johnson, S.C., Porretta J.M., Seifert, J.G. & White, A.T. (1993) Capillary blood lactate concentrations in elite skiers during a series of on-snow downhill ski runs. The J. of Strength and Cond. Res. 7(3):168-171.
4. **Richardson, R.S.** (1993) The hazards of active and passive smoking N. Engl. J. Med. 328(21):1580-1581.
5. **Richardson, R.S.** Poole, D.C. Knight, D.R., Kurdak, S.S., Hogan, M.C., Grassi, B., Johnson, E.C. Kendrick, K., Erickson, B.K., & Wagner, P.D. (1993) High muscle blood flow in man: Is maximal O₂ extraction compromised? J. Appl. Physiol. 75(4):1911-1916.
6. Kendrick, K., Chance, B., & **Richardson, R.S.** (1993) Relative deoxygenation in the vastus lateralis. in Photon Migration and Imaging in Random Media and Tissues. Chance, B and Alfano, R (eds). The International Society for Optical Engineering (SPIE) Proceedings. 1888:473-478.
7. **Richardson, R.S.** & Johnson, S.C., (1994) The effect of aerodynamic handlebars on oxygen consumption while cycling at a constant Speed. Ergonomics 37(5):859-863.
8. Hogan, M.C., **Richardson, R.S.** & Kurdak, S.S. (1994) Initial fall in skeletal muscle force development during ischemia is related to O₂ availability. J. Appl. Physiol. 77(4) 2380-2384.
9. Hogan, M.C., Kurdak, S.S., & **Richardson, R.S.** & Wagner, P.D. (1994) Partial substitution of red blood cells with free hemoglobin solution does not improve maximal O₂ uptake of working in situ dog muscle Adv. Exp. Med. Biol. 361:375-378.
10. **Richardson, R.S.** Knight, D.R., Poole, D.C., Kurdak, S.S., Hogan, M.C., Grassi, B., & Wagner, P.D. (1994). Determinants of maximal exercise VO₂ during single leg knee extensor exercise in man. Am. J. Physiol. 268: H1453-H1461.
11. **Richardson, R.S.** Poole, D.C. Knight, D.R., & Wagner, P.D. (1994). Red blood cell transit time: Theoretical effects of capillary density. Adv. Exp. Med. Biol. 361:517-528.
12. **Richardson, R.S.**, Noyszewski, E.A., Kendrick, K.F., Leigh, J.S. and Wagner, P.D. (1995) Myoglobin desaturation during exercise: Evidence of limited O₂ transport. J. Clin. Invest. 96 : 1916-1926.

13. **Richardson, R.S.**, Kennedy, B., Knight, D.R., and Wagner, P.D. (1995) High muscle blood flows are not attenuated by recruitment of additional muscle mass. Am. J. Physiol. 269 : H1545-1552.14.
14. Wagner, P.D., Erickson, B.K., Kubo, K., Hiraga, A., Kai, M., Yamaya, Y., **Richardson, R.S.**, and Seaman, J. (1995). Maximum oxygen transport and utilization before and after splenectomy Equine Veterinary Journal 18 : 82-89.
15. Eldridge, M.W., Podolsky, A., **Richardson, R.S.**, Knight, D.R., Johnson, E.C., Hopkins, S.R., Michimata, H., Grassi, B., Feiner, J., Kurdak, S.S., Bickler, P., Wagner, P.D. and J. Severinghaus (1995). Pulmonary hemodynamics responses to hypoxia and exercise in individuals susceptible to high altitude pulmonary edema. J. Appl. Physiol. 81: 911-921.
16. Podolsky, A., Eldridge, M.W., **Richardson, R.S.**, Knight, D.R., Johnson, E.C., Hopkins, S.R., Michimata, H., Grassi, B., Feiner, J., Kurdak, S.S., Bickler, P., Wagner, P.D. and J. Severinghaus (1995). Relationship of high altitude pulmonary edema to exercise-induced VA/Q inequality. J. Appl. Physiol. 81: 922-932.
17. **Richardson, R.S.**, Verstraete, D., Schultz, W., Johnson, S.C., Luetkemeier, M.J., and Stray-Gundersen, J. (1996) Evidence of a secondary hypervolemia in trained man following acute high intensity exercise. Int. J. Sports Med. 17 : 243-247.
18. Grassi, B. Poole, D.C. **Richardson, R.S.** Knight, D.R. Erickson, B.K. and Wagner, P.D. (1996) Muscle O₂ uptake kinetics in humans: Implications for metabolic control J. Appl. Physiol. 80 : 988-998.
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152. Witman, M.A., J. McDaniel, S.J. Ives, A.S. Fjeldstad, J. Zhao, J. Stehlik, D.W. Wray, and R.S. Richardson (2012). Role of free radicals in the regulation of systemic vascular resistance in chronic heart failure. Med. Sci. Sports. Exerc. 44: S666.
153. Trinity, J.D., D.W. Wray, M.A.H. Witman, G. Layec, Z. Barrett-O'Keefe, S.J. Ives, J.D. Conklin, and **R.S. Richardson** (2012). Progressive handgrip exercise: evidence of attenuated nitric-oxide dependent vasodilation and blood flow regulation with age. Med. Sci. Sports. Exerc. 44: S663.
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156. Hart, C.R., G. Layec, J.D. Trinity, X. Liu, S.E. Kim, J. Groot, E.K. Jeong, and R.S. Richardson (2012). Post exercise skeletal muscle phosphocreatine recovery and reoxygenation: Implications for oxygen transport and utilization with age. Med. Sci. Sports. Exerc. 44: S111.
157. Layec, G., L.J. Haseler, and **R.S. Richardson** (2012). Effect of superimposing reactive hyperemia on PCr recovery kinetics: Different outcomes from healthy subjects and COPD patients. Med. Sci. Sports. Exerc. 44: S111
158. Rossman, M.J. M. Venturelli, J. McDaniel, M. Amann, and **R.S. Richardson** (2012). Muscle mass and peripheral fatigue: Implications for the role of afferent feedback. Med. Sci. Sports. Exerc. 44: S97
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No longer updated.

3. **Invited Lectures**

1. Richardson, R.S. (1991). Physiological Testing of Elite Athletes. The International Olympic Committee (IOC) Academy XV. Colorado State University, Fort Collins, CO.
2. Richardson, R.S. (1991). Exercise: Membership has its Privileges! American Express, Salt Lake City, UT.
3. Richardson, R.S. (1991). Exercise Physiology for the Athlete. Spring Performance Clinic. Salt Lake City, UT.
4. Richardson, R.S. (1992). The "Link" Between Nutrition and Exercise. The Latter Day Saints 5. Church, Salt Lake City, UT.
6. Richardson, R.S. (1991). Nutrition and Fluid Balance: Concepts for the Athlete. Summer Performance Clinic. Salt Lake City, UT.
7. Richardson, R.S. (1993). Physiology of Performance. U.S.A. Visa Decathlon Team, Tempe, AZ.
8. Richardson, R.S. (1993) Human Muscle Blood Flow in Exercise: New Insights. Department of Exercise and Sport Research Institute, Arizona State University, Tempe, AZ.
9. Richardson, R.S. (1994) *In vivo* studies of oxygen supply and demand in human muscle. School of Medicine, The Johnson Research Foundation, Department of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, PA.
10. Richardson, R.S. (1995) Oxygen transport: Air to Muscle cell. American College of Sports Medicine, Minneapolis, MN. Symposium.
11. Richardson, R.S. (1998) VO_{2max} : Governed by oxygen delivery or demand? American College of Sports Medicine, Orlando, FL. Symposium.
12. Richardson, R.S. (1998) Oxygen Transport from Air to Cell. Southwest Chapter American College of Sports Medicine, La Vegas, Symposium.
13. Richardson, R.S. (1999) Skeletal muscle in chronic respiratory diseases European Respiratory Society Research Seminar, Rome, Italy.
14. Richardson, R.S. (1999) Myoglobin measurements: Access to intracellular PO_2 . Oxygen transport and utilization, Acta Physiological Scandinavica Symposium, Copenhagen Denmark.
15. Richardson, R.S. (1999) Oxygen transport and metabolism in exercising human skeletal muscle. August Krogh Institute, Copenhagen, Denmark.
16. Richardson, R.S. (1999) Determinants of maximal oxygen uptake. Odense University, Odense, Denmark.
17. Richardson, R.S. (1999) Maximal oxygen uptake: limitations and determinants. University of Oslo, Oslo, Norway.
18. Richardson, R.S. (2000) Oxygen transport and blood flow during exercise in humans. University of Kobe, Kobe, Japan.
19. Richardson, R.S. (2000) Metabolism and blood flow during exercise in humans. University of Tokyo, Tokyo, Japan.
20. Richardson, R.S. (2001) Skeletal muscle intracellular PO_2 and exercise. International Workshop: Non Invasive Investigation of muscle function. Marseilles, France.
21. Richardson, R.S. (2001) Exercise training adaptations and VEGF gene expression. University of Tskuba, Tskuba, Japan.
22. Richardson, R.S. (2001) VEGF gene expression and exercise training adaptation. International sports science network forum. Nagano, Japan.

23. Richardson, R.S. (2001) Evolving techniques for the investigation of bioenergetics and oxygenation. Royal Biochemical and Physiological Society joint meeting. York, England.
24. Richardson, R.S. (2002) Bioenergetics perfusion and oxygenation in skeletal muscle. Groupe Hospitalier Pitié-Salpêtrière, Paris, France.
25. Richardson, R.S. (2002) Skeletal muscle – master or slave of the cardiovascular system? University of Trondheim, Trondheim, Norway.
26. Richardson, R.S. (2002) The effect of CHF and COPD on the metabolic capacity of human skeletal muscle. University of Trondheim, Trondheim, Norway.
27. Richardson, R.S. (2002) The effect of CHF and COPD on the metabolic capacity of human skeletal muscle. Norwegian Sports Medicine and Occupational Therapy Conference, Trondheim, Norway.
28. Richardson, R.S. (2002) Skeletal muscle – master or slave of the cardiovascular system? Norwegian Sports Medicine and Occupational Therapy Conference, Trondheim, Norway.
29. Richardson, R.S. (2002) Exercise and aging: From bench to bedside. American College of Chest Physicians, San Diego.
30. Richardson, R.S. (2003) MRS AND MRI: Bioenergetics and oxygenation. University of Waterloo, Ontario, Canada.
31. Richardson, R.S. (2003) Vascular function during exercise and age. University of Guelph, Ontario, Canada
32. Richardson, R.S. (2003) Exercise and the integration of muscle systems. Experimental Biology, San Diego.
33. Richardson, R.S. (2003) Changes in intracellular PO₂ with exercise: Evidence from MRS Experimental Biology, San Diego.
34. Richardson, R.S. (2004) Aging, exercise and cardiovascular disease. Kaiser Hospital, Richmond, CA.
35. Richardson, R.S. Evolving techniques for the investigation of muscle bioenergetics and oxygenation (2004) TMJ Society Annual Meeting, Bethesda, MD.
36. Richardson, R.S. (2004) Skeletal muscle oxidative metabolism in heart failure patients: 31P-MRS assessment of O₂ supply and demand limitations. Cellular Biology of Exercise Training in Cardiovascular Disease Symposium. Trondheim, Norway.
37. Richardson, R.S. (2005) Oxygenation and exercising skeletal muscle. American College of Sports Medicine. Nashville, TN.
38. Richardson, R.S. (2005) Skeletal muscle in COPD: Evidence from human studies. American College of Sports Medicine. Nashville, TN.
39. Richardson, R.S. (2005) Sources of skeletal muscle metabolic heterogeneity. Non-Invasive Human Physiology Workshop. Nashville, TN.
40. Richardson, R.S. (2005) Skeletal muscle free radical generation with exercise and aging. Free Radical Research Society: Australia and Japan. Gold Coast, Australia.
41. Richardson, R.S. (2005) Limitations to maximal exercise: New insights. The School of Physiotherapy and Exercise Science, Griffith University, Australia.
42. Richardson, R.S. (2006) Muscle oxygenation: The role of exercise and aging. The Health Science Center, Fort Worth, TX.
43. Richardson, R.S. (2006) Dynamics of myoglobin desaturation during exercise in humans. American College of Sports Medicine. Denver, CO.

44. Richardson, R.S. (2006) Exercise, aging, and oxidative stress. Exercise in Medicine, NTNU, Trondheim, Norway.
45. Richardson, R.S. (2007) Vascular function: Aging, exercise and oxidative stress. University of Utah, Division of Geriatrics, Salt Lake City, UT.
46. Richardson, R.S. (2007) Skeletal muscle oxygenation state: Implications for exercise and aging. Copenhagen Muscle Research Center, Copenhagen, Denmark.
47. Richardson, R.S. (2007) Aging vascular function and free radicals. University of California, San Diego, Department of Medicine, La Jolla, CA.
48. Richardson, R.S. (2007) Exercise and intracellular oxygenation state. August Krogh Institute, Copenhagen, Denmark.
49. Richardson, R.S. (2007) Exercise, Aging and Oxidative Stress, South West America College of Sports Medicine, San Diego
50. Richardson, R.S. (2007) Aging and the limitations to exercise, Human Anatomy and Physiology Society National Meeting.
50. Richardson, R.S. (2008) Aging, Exercise, and Oxidative Stress, Department of Exercise and Sport Science, University of Utah.
51. Richardson, R.S. (2008) Aging, Exercise, and Oxidative Stress, Department of Medicine Grand Rounds, University of Utah.
52. Richardson R.S. (2008) Muscle metabolism, perfusion and oxygenation assessed by NMRI. Treat-NMD/MRI European Neuromuscular/NIH workshop Naarden, The Netherlands.
53. Richardson, R.S. (2008) Exercise and intracellular oxygenation state. Copenhagen Muscle Research Center, Copenhagen, Denmark.
54. Richardson, R.S. (2008) Human muscle blood flow and metabolic assessment applied to aging. American College of Sports Medicine. Indianapolis, IN.
55. Richardson, R.S. (2008) Skeletal muscle in COPD and CHF as targets for exercise training Exercise in Medicine, NTNU, Trondheim, Norway.
56. Richardson, R.S. (2008) Exercise and decompression at the future of Diving: 100 years of Haldane and beyond, NTNU, Trondheim, Norway.
57. Richardson, R.S. (2009) Exercise limitation in COPD: The role of skeletal muscle. Grand Rounds, Division of Pulmonary and Critical Care Medicine, University of Utah.
58. Richardson, R.S. (2009) Aging, exercise and intracellular oxygenation state. Panam Institute, Copenhagen, Denmark.
59. Richardson, R.S. (2009) Exercise hyperemia: Partitioning the peripheral and central factors. European College of Sports Sciences, Oslo
60. Richardson, R.S. (2009) Effects of obstructive pulmonary disease and heart failure on skeletal muscle. Scandinavian Research Network meeting, Oslo
61. Richardson, R.S. (2009) Oxidative stress, aging, and vascular function. University of Milan, School of Exercise Science, Milan, Italy.
62. Richardson, R.S. (2010) Intracellular oxygenation and age. Copenhagen Muscle Research Center, Copenhagen, Denmark.
63. Richardson, R.S. (2010) Exercise-induced hyperemia, the impact of age and oxidative stress. University of Verona, Italy.
64. Richardson, R.S. (2010) Oxidative-nitrosative stress and its impact on vascular O₂ transport to skeletal muscle, American College of Sports Medicine. Baltimore, MA.

65. Richardson, R.S. (2010) Antioxidants and exercise is there a paradox? Aging and antioxidants. American College of Sports Medicine, Baltimore, MA.
66. Richardson, R.S. (2010) Antioxidants and exercise is there a paradox? Rocky Mountain Geriatrics Conference, Park City, UT
67. Richardson, R.S. (2010) Exercise and aging vasculature: The role of oxidative stress. South West Chapter, American College of Sports Medicine, San Diego, CA.
68. Richardson R.S. (2010) Exercise and oxygen availability: The cellular impact. The Division of Endocrinology Metabolism Interest Group Guest Lecture series, University of Utah.
69. Richardson, R.S. (2010) Skeletal muscle blood flow assessment: Arterial spin labeling as an approach. Copenhagen Muscle Research Center, Copenhagen, Denmark.
70. Richardson, R.S. (2010) Tissue oxygenation during rest and exercise. Copenhagen Muscle Research Center, Copenhagen, Denmark.
71. Richardson, R.S. (2010) Exercise and oxygen availability: The Cellular impact. University of Milan, Italy.
72. Richardson, R.S. (2010) Intracellular oxygen availability: The impact of exercise and hypoxia. NTNU, Trondheim, Norway.
73. Richardson, R.S. (2011) Assessing intracellular oxygenation with a focus upon aging. Copenhagen Muscle Research Center, Copenhagen, Denmark.
74. Richardson, R.S. (2011) Oxygen: From mitochondria to medals. American College of Sports Medicine, Denver, CO.
75. Richardson, R.S. (2011) Antioxidants, aging, and exercise: Is there a paradox? University of Florida, VA Geriatric Research Education and Clinical Center, and the Institute on Aging
76. Richardson, R.S. (2011) The paradox of oxidative stress and exercise with advancing age, Norwegian University of Science and Technology (NTNU), Trondheim, Norway
77. Richardson, R.S. (2012) Determinants of VO_{2max} in health and disease, University of Utah, Exercise and Sport Science and Utah Vascular Research Laboratory Colloquium series.
78. Richardson, R.S. (2012) Intracellular oxygenation assessment, with a focus upon aging. Copenhagen Muscle Research Center, Copenhagen, Denmark.
79. Richardson R.S. (2012) Determinants of VO_{2max} in health and disease, The Division of Endocrinology Metabolism Interest Group Guest Lecture series, University of Utah.
80. Richardson, R.S. (2012) Imaging skeletal muscle blood flow and metabolism with NMR. Copenhagen Muscle Research Center, Copenhagen, Denmark.
81. Richardson, R.S. (2012) Skeletal muscle studied with NMR: What do we know and would like to know? Department of Radiology, University of Utah.
82. Richardson, R.S. (2012) Aging, exercise, and oxidative stress. University of Oregon, Eugene, OR.
83. Richardson, R.S. (2012) Determinants of VO_{2max} in health and disease, Department of Anatomy, Kinesiology, and Applied Physiology, Kansas State University, Manhattan, KS.
84. Richardson, R.S. (2013) Methods to assess intracellular oxygenation in vivo. Copenhagen Muscle Research Center, Copenhagen, Denmark.
85. Richardson, R.S. (2013) Assessing vascular function with active and passive exercise: is this the way of the future? American College of Sports Medicine, Indianapolis.
86. Richardson, R.S. (2013) Evidence of preserved vascular function in individuals with a spinal cord injury. American College of Sports Medicine, Indianapolis.

87. Richardson, R.S. (2013) Air Quality, oxidative stress, and vascular health. University of Utah, Air Quality, Health and Society Retreat.
88. Richardson, R.S. (2013) Assessing vascular function with active and passive exercise: is this the way of the future? Division of Geriatrics Research Conference, University of Utah.
89. Richardson, R.S. (2014) Intracellular oxygenation implications from in vivo measurements Copenhagen Muscle Research Center, Copenhagen, Denmark.
90. Richardson, R.S. (2014) Oxygen availability in health and disease during exercise. Experimental Biology, San Diego.
91. Richardson, R.S. (2014) Aging and efficiency during whole body non-weight bearing exercise. American College of Sports Medicine, Orlando.
92. Richardson, R.S. (2014) Presidents Lecture: Research Perspectives on Exercise and Aging. Scienze Motorie e Sportive Congresso Nazionale, Naples, Italy.
93. Richardson, R.S. (2014) Oxygen transport and Utilization: The impact of aging and immobility. Societa Italiana di Fisiologia Anacapri, Italy.
94. Richardson, R.S. (2014) Aging and Immobility: Differential effects in the old and oldest old, Department of Geriatric Medicine, University of Verona, Verona, Italy.
95. Richardson, R.S. (2014) Heart Failure: submaximal and maximal exercise limitations. School of Exercise Science, University of Milan, Milan, Italy.
96. Richardson, R.S. (2014) The Role of Skeletal Muscle Convective and Diffusive Oxygen Transport in HFrEF. Gerontological Society of America Annual Meeting, Washington D.C.
97. Richardson, R.S. (2014) Assessing vascular function with active and passive exercise: is this the way of the future? Department of Kinesiology, University of Georgia, Athens, GA.
98. Richardson, R.S. (2014) Maximal Respiration what are the limits? Department of Exercise and Sport Science, University of Utah, Salt Lake City, UT.
99. Richardson, R.S. (2015) Vascular consequences of inhaled particulate matter: vulnerability in health and disease. Air Quality in Utah: Science for Solutions Joint Workshop: Utah Division of Air Quality and University of Utah Program for Air Quality, Health, and Society. Salt Lake City, UT.
100. Richardson, R.S. (2015) Aging and skeletal muscle work efficiency. 29th Annual Update in Physical Medicine and Rehabilitation Conference, Park City, UT.
101. Richardson, R.S. (2015) Oxygen supply and mitochondrial function. Mitochondrial Physiology: From Organelle to Organism. University of Copenhagen, Denmark.
102. Richardson, R.S. (2015) Skeletal muscle function and aging. School of Medicine, Division of Geriatric Medicine, Colorado University
103. Richardson, R.S. (2015) Efficiency of Mobility with age. Department of Medicine, Division of Geriatrics, University of Utah.
105. Richardson, R.S. (2015) Muscle efficiency and aging. National Academy of Kinesiology National Meeting, Philadelphia.
105. Richardson, R.S. (2015) Vascular function assessment with passive limb movement: A clinically relevant approach. Department of Kinesiology and Applied Physiology, University of Delaware, Newark.
106. Richardson, R.S. (2015) Oxygen availability and skeletal muscle mitochondrial function in health and disease. Korean Physiological Society, Busan, South Korea.
107. Richardson, R.S. (2015) Passive Leg Movement as a Clinically Relevant Tool with which to Assess Vascular Function in Health and Disease. Korean National University, Busan, South Korea.

108. Richardson, R.S. (2016) Evolving methods to assess vascular function in health and disease. University of Milan, Italy.
109. Richardson, R.S. (2016) Exercise and healthy aging. University of Verona, Italy.
110. Richardson, R.S. (2016) Vascular aging and mobility: Implications from head to toe. Virtual All GRECC Conference.
111. Richardson, R.S. (2016) Vascular consequences of inhaled particulate matter: Vulnerability in health and disease, Mountain West Regional Chapter of the Society of Toxicology, University of Utah.
112. Richardson, R.S. (2016) Oxygen and Exercise Performance from Organism to Organelle, Aalborg University, Denmark
113. Richardson, R.S. (2016) Oxygen: Essential for life, important for exercise performance, South West American College of Sports Medicine, Orange County, CA.
114. Richardson, R.S. (2017) Peripheral vascular pulsatility and function in heart failure with mechanical circulatory assist. Utah Cardiac Recovery Symposium, Salt Lake City, Utah.
115. Richardson, R.S. (2017) Convective and Diffusive Oxygen Transport in Heart Failure: Partitioning the Contributors to Exercise Intolerance. American College of Sports Medicine, Denver, CO.
116. Richardson, R.S. (2017) Cardiovasomobility: Linking cardiovascular health and mobility, University of Milan, Milan, Italy
117. Richardson, R.S. (2017) Limitations to exercise with advancing age and age-related disease, University of Milan, Milan, Italy
118. Richardson, R.S. (2017) Exercise is the fountain of youth: Metabolic and vascular evidence, 7th Mountain Sports and Health Congress, Centro Ricerca Sport Montagna e Salute, Rovereto, Italy
119. Richardson, R.S. (2017) Vascular factors associated with healthy aging: New evidence in the brain and muscle, Il ruolo stille di vita per un invecchiamento di successo, Mazzali Foundation and University of Verona, Mantova, Italy.
120. HFpEF and HFrEF: Distinct phenotypes or a continuum? Understanding the role of the periphery. Utah Cardiac Recovery Symposium (U-CARS), University of Utah, Salt Lake City, UT.
121. Richardson, R.S. (2018) Cardiovasomobility: A concept that should be close to our hearts and, oh yes, our brains. University of Verona, Verona, Italy.
122. Richardson, R.S. (2018) Reactive oxygen species and the vasculature: Implications for antioxidant and exercise treatment, Florence, Italy.