# Ryan S. Garten Ph.D.

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# **Education**

- August 2011Doctor of Philosophy<br/>Exercise Physiology<br/>University of North Carolina at Greensboro<br/>Advisor: Allan H. Goldfarb, Ph.D. FACSM, FAAKPE<br/>Dissertation: The Effects of Partial Vascular Occlusion on Oxidative<br/>Stress Markers in Young Resistance Trained Males
- August 2006Master of Science<br/>Exercise Physiology<br/>The University of Mississippi, University, Mississippi<br/>Advisor: Edmund Acevedo, Ph.D., FACSM<br/>Thesis: Balance, Gait, and Physiological Responses in Professional<br/>Firefighters Wearing Rubber and Leather Boots Participating in a Fire<br/>Simulation Activity
- May 2004 Bachelor of Science Exercise and Sport Science The University of Mississippi, University, Mississippi Advisor: Edmund Acevedo, Ph.D., FACSM

## **Professional Experience**

- 7/2021-present Associate Professor Department of Kinesiology and Health Sciences Virginia Commonwealth University Richmond, VA
- 8/2015-7/2021 Assistant Professor Department of Kinesiology and Health Sciences Virginia Commonwealth University Richmond, VA
- 1/2013-7/2015 Advanced Research Fellow in Geriatrics Utah Vascular Research Laboratory Geriatric Research, Education, and Clinical Center George E Whalen Veterans Affairs Medical Center, Salt Lake City, UT Director: Russell Richardson Ph.D.

11/2011-1/2013 Post-Doctoral Fellow Utah Vascular Research Laboratory School of Internal Medicine (Division of Geriatrics) University of Utah, Salt Lake City, UT Director: Russell Richardson Ph.D.

#### 8/2010 – 8/2011 Instructor Health and Human Performance Department Virginia Commonwealth University Richmond, VA

#### 8/2006 – 8/2010 Graduate Assistant Kinesiology University of North Carolina - Greensboro Greensboro, NC

- 8/2005 8/2006 Graduate Assistant Federal Emergency Management Association Firefighter Fitness Grant Health, Exercise Science and Recreation Management The University of Mississippi University, MS
- 8/2004 8/2005 Graduate Teaching & Research Assistant Health, Exercise Science and Recreation Management The University of Mississippi University, MS

# **Publications**

Google Scholar Citations: Total = **2021**; Since 2017 = **1542** Google Scholar H-Index: Total = **25**; Since 2017 = **22** Pubmed Link - <u>https://www.ncbi.nlm.nih.gov/myncbi/1L58O3Xzs-YAu/bibliography/public/</u> # - mentored graduate student; \* - mentored undergraduate student

- Hogwood AC<sup>#</sup>, Decker KP<sup>#</sup>, Darling AM<sup>#</sup>, Weggen JB<sup>#</sup>, Chiu A<sup>#</sup>, Richardson J<sup>#</sup>, Garten RS. Exaggerated pressor responses, but unaltered blood flow regulation and functional sympatholysis during lower limb exercise in young, non-Hispanic black males. Microvasc Res. 2022 Oct 6;145:104445. doi: 10.1016/j.mvr.2022.104445.
- Thomas GK, Trankle CR, Carbone S, Billingsley H, Van Tassell BW, Evans RK, Garten R, Weiss E, Abbate A, Canada JM. Diastolic Dysfunction Contributes to Impaired Cardiorespiratory Fitness in Patients with Lung Cancer and Reduced Lung Function Following Chest Radiation. Lung. 2021 Aug;199(4):403-407. doi: 10.1007/s00408-021-00454-6.
- 3. Weggen JB<sup>#</sup>, Darling AM<sup>#</sup>, Autler AS<sup>\*</sup>, Hogwood AC<sup>#</sup>, Decker KP<sup>#</sup>, Imthurn B<sup>\*</sup>, Tuzzolo GM<sup>\*</sup>, **Garten RS**. Impact of acute antioxidant supplementation on vascular function and

autonomic nervous system modulation in young adults with PTSD. Am J Physiol Regul Integr Comp Physiol. 2021 Jul 1;321(1):R49-R61. doi: 10.1152/ajpregu.00054.2021.

- Decker KP<sup>#</sup>, Feliciano PG<sup>\*</sup>, Kimmel MT<sup>\*</sup>, Hogwood AC<sup>#</sup>, Weggen JB<sup>#</sup>, Darling AM<sup>#</sup>, Richardson JW<sup>\*</sup>, **Garten RS**. Examining sex differences in sitting-induced microvascular dysfunction: Insight from acute vitamin C supplementation. Microvasc Res. 2021 May;135:104147. doi: 10.1016/j.mvr.2021.104147. Epub 2021 Feb 19.
- 5. Slusher AL, Fico BG, Dodge KM, **Garten RS**, Ferrandi PJ, Rodriguez AA, Pena G, Huang CJ. Impact of acute high-intensity interval exercise on plasma pentraxin 3 and endothelial function in obese individuals-a pilot study. Eur J Appl Physiol. 2021 Jun;121(6):1567-1577. doi: 10.1007/s00421-021-04632-5.
- Kirkman DL, Bohmke N, Carbone S, Garten RS, Rodriguez-Miguelez P, Franco RL, Kidd JM, Abbate A. Exercise intolerance in kidney diseases: physiological contributors and therapeutic strategies. Am J Physiol Renal Physiol. 2021 Feb 1;320(2):F161-F173. doi: 10.1152/ajprenal.00437.2020.
- Carbone S, Kirkman DL, Garten RS, Rodriguez-Miguelez P, Artero EG, Lee DC, Lavie CJ. Muscular Strength and Cardiovascular Disease: AN UPDATED STATE-OF-THE-ART NARRATIVE REVIEW. J Cardiopulm Rehabil Prev. 2020 Sep;40(5):302-309. doi: 10.1097/HCR.00000000000525. PMID: 32796492.
- 8. Scott MC, Hogwood AC<sup>#</sup>, Fralin RC<sup>#</sup>, Weggen JB<sup>#</sup>, Zúñiga TM<sup>#</sup>, **Garten RS**. Low sleep efficiency does not impact upper or lower limb vascular function in young adults. Exp Physiol. 2020 Aug;105(8):1373-1383. doi: 10.1113/EP088658.
- Ives SJ, Layec G, Hart CR, Trinity JD, Gifford JR, Garten RS, Witman MAH, Sorensen JR, Richardson RS. Passive leg movement in chronic obstructive pulmonary disease: evidence of locomotor muscle vascular dysfunction. J Appl Physiol (1985). 2020 May 1;128(5):1402-1411. doi: 10.1152/japplphysiol.00568.2019.
- Canada JM, Thomas GK, Trankle CR, Carbone S, Billingsley H, Van Tassell BW, Evans RK, Garten R, Weiss E, Abbate A. Increased C-reactive protein is associated with the severity of thoracic radiotherapy-induced cardiomyopathy. Cardiooncology. 2020 Feb 28;6:2. doi: 10.1186/s40959-020-0058-1.
- 11. Canada JM, Trankle CR, Carbone S, Buckley LF, Chazal M, Billingsley H, Evans RK, Garten R, Van Tassell BW, Kadariya D, Mauro A, Toldo S, Mezzaroma E, Arena R, Hundley WG, Grizzard JD, Weiss E, Abbate A. Determinants of Cardiorespiratory Fitness Following Thoracic Radiotherapy in Lung or Breast Cancer Survivors. Am J Cardiol. 2020 Mar 15;125(6):988-996. doi: 10.1016/j.amjcard.2019.12.019.
- Garten RS, Scott MC, Zúñiga TM<sup>#</sup>, Hogwood AC<sup>#</sup>, Fralin RC<sup>#</sup>, Weggen J<sup>#</sup>. A Prior High-Intensity Exercise Bout Attenuates the Vascular Dysfunction Resulting From a Prolonged Sedentary Bout. Phys Act Health. 2019 Oct 1;16(10):916-924. doi: 10.1123/jpah.2018-0568.

- 13. **Garten RS**, Darling A<sup>#</sup>, Weggen J<sup>#</sup>, Decker K<sup>#</sup>, Hogwood AC<sup>#</sup>, Michael A<sup>\*</sup>, Imthurn B<sup>\*</sup>, Mcintyre A<sup>\*</sup>. Aerobic training and vascular protection: Insight from altered blood flow patterns. Exp Physiol. 2019 Sep;104(9):1420-1431. doi: 10.1113/EP087576.
- 14. **Garten RS**, Hogwood AC<sup>#</sup>, Weggen J<sup>#</sup>, Decker K<sup>#</sup>, Darling A<sup>#</sup>, Maniyar R<sup>\*</sup>, Michael A<sup>\*</sup>. Examining Arm Vascular Function and Blood Flow Regulation in Row-trained Males. Med Sci Sports Exerc. 2019 Oct;51(10):2058-2066. doi: 10.1249/MSS.000000000002014.
- Carbone S, Billingsley HE, Rodriguez-Miguelez P, Kirkman DL, Garten R, Franco RL, Lee DC, Lavie CJ. Lean Mass Abnormalities in Heart Failure: The Role of Sarcopenia, Sarcopenic Obesity, and Cachexia. Curr Probl Cardiol. 2019 Mar 28;:100417. doi: 10.1016/j.cpcardiol.2019.03.006.
- 16. Garten RS, Hogwood AC<sup>#</sup>, Weggen JB<sup>#</sup>, Fralin RC<sup>#</sup>, LaRosa K<sup>\*</sup>, Lee D<sup>\*</sup>, Michael A<sup>\*</sup>, Scott M. Aerobic training status does not attenuate prolonged sitting-induced lower limb vascular dysfunction. Appl Physiol Nutr Metab. 2019 Apr;44(4):425-433. doi: 10.1139/apnm-2018-0420.
- 17. Del Buono MG, Arena R, Borlaug BA, Carbone S, Canada JM, Kirkman DL, Garten R, Rodriguez-Miguelez P, Guazzi M, Lavie CJ, Abbate A. Exercise Intolerance in Patients With Heart Failure: JACC State-of-the-Art Review. J Am Coll Cardiol. 2019 May 7;73(17):2209-2225. doi: 10.1016/j.jacc.2019.01.072. Review.
- Weavil JC, Hureau TJ, Thurston TS, Sidhu SK, Garten RS, Nelson AD, McNeil CJ, Richardson RS, Amann M. Impact of age on the development of fatigue during large and small muscle mass exercise. Am J Physiol Regul Integr Comp Physiol. 2018 Oct 1;315(4):R741-R750. doi: 10.1152/ajpregu.00156.2018.
- Gifford JR, Trinity JD, Kwon OS, Layec G, Garten RS, Park SY, Nelson AD, Richardson RS. Altered Skeletal Muscle Mitochondrial Phenotype in COPD: Disease versus Disuse. J Appl Physiol (1985). 2018 Apr 1; 124(4): 1045-1053.
- 20. Machin DR, Clifton HL, **Garten RS**, Gifford JR, Richardson RS, Wray DW, Frech TM, Donato AJ. Exercise-induced brachial artery blood flow and vascular function is impaired in systemic sclerosis. Am J Physiol Heart Circ Physiol. 2016 Dec1;311(6):H1375-H1381.
- 21. Rossman MJ, Groot HJ, **Garten RS**, Witman MA, Richardson RS. Vascular function assessed by passive leg movement and flow-mediated dilation: initial evidence of construct validity. Am J Physiol Heart Circ Physiol. 2016 Nov 1;311(5):H1277-H1286.
- 22. Layec G, Gifford JR, Trinity JD, Hart CR, Garten RS, Park SY, Le Fur Y, Jeong EK, Richardson RS. Accuracy and precision of quantitative 31P-MRS measurements of human skeletal muscle mitochondrial function. Am J Physiol Endocrinol Metab. 2016 Aug 1;311(2):E358-66.
- 23. Groot HJ, Rossman MJ, **Garten RS**, Wang E, Hoff J, Helgerud J, Richardson RS. The Effect of Physical Activity on Passive Leg Movement-Induced Vasodilation with Age. Med Sci Sports Exerc. 2016 Aug;48(8):1548-57.

- 24. Lee JF, Barrett-O'Keefe Z, Nelson AD, **Garten RS**, Ryan JJ, Nativi-Nicolau JN, Richardson RS, Wray DW. Impaired skeletal muscle vasodilation during exercise in heart failure with preserved ejection fraction. Int J Cardiol. 2016 May 15;211:14-21.
- 25. Nelson AD, Rossman MJ, Witman MA, Barrett-O'Keefe Z, Groot HJ, Garten RS, Richardson RS. Nitric oxide-mediated vascular function in sepsis using passive leg movement as a novel assessment: a cross-sectional study. J Appl Physiol (1985). 2016 May 1;120(9):991-9.
- 26. Gifford JR, Garten RS, Nelson AD, Trinity JD, Layec G, Witman MA, Weavil JC, Mangum T, Hart C, Etheredge C, Jessop J, Bledsoe A, Morgan DE, Wray DW, Richardson RS (2015). Symmorphosis and Skeletal Muscle VO<sub>2</sub>max: In Vivo and In Vitro Measures Reveal Differing Constraints in the Exercise-trained and Untrained Human. *J Physiol.* 2016 Mar 15;594(6):1741-51.
- 27. Lee JF, Barrett-O'Keefe Z, **Garten RS**, Nelson AD, Ryan JJ, Nativi JN, Richardson RS, Wray DW (2015). Evidence of microvascular dysfunction in heart failure with preserved ejection fraction. *Heart* 102 (4), 278-284.
- 28. Gifford J.R., Trinity J.D., Layec G., Garten R.S., Park S.Y., Rossman M.J., Larsen S., Dela F., Richardson R.S. (2015). Quadriceps exercise intolerance in patients with chronic obstructive pulmonary disease: the potential role of altered skeletal muscle mitochondrial respiration. *J Appl Physiol (1985)*. Oct 15;119(8):882-8.
- Rossman MJ, Trinity JD, Garten RS, Ives SJ, Conklin JD, Barrett-O'Keefe Z, Witman MA, Bledsoe AD, Morgan DE, Runnels S, Reese VR, Zhao J, Amann M, Wray DW, Richardson RS. (2015). Oral antioxidants improve leg blood flow during exercise in patients with chronic obstructive pulmonary disease. *Am J Physiol Heart Circ Physiol*. Sep;309(5):H977-85.
- 30. Witman MA, Garten RS, Gifford JR, Groot HJ, Trinity JD, Stehlik J, Nativi JN, Selzman CH, Drakos SG, Richardson RS. (2015). Further Peripheral Vascular Dysfunction in Heart Failure Patients With a Continuous-Flow Left Ventricular Assist Device: The Role of Pulsatility. JACC Heart Fail. Sep;3(9):703-11.
- Garten RS, Goldfarb A, Crabb B, Waller J. (2015). The Impact of Partial Vascular Occlusion on Oxidative Stress Markers during Resistance Exercise. *Int J Sports Med.* Jun;36(7):542-9.
- 32. Sidhu SK, Weavil JC, Venturelli M, Garten RS, Rossman MJ, Richardson RS, Gmelch BS, Morgan DE, Amann M. (2014). Spinal μ-opioid receptor-sensitive lower limb muscle afferents determine corticospinal responsiveness and promote central fatigue in upper limb muscle. J Physiol. Nov 15;592(Pt 22):5011-24.

- 33. Goldfarb AH, Garten RS, Waller J, Labban JD. (2014). Day to Day Variability and Reliability of Blood Oxidative Stress Markers within a Four-Week Period in Healthy Young Men. J Biomark. 2014:248-313.
- McKenzie, M.J., Goldfarb, A.H., Garten, R.S., Vervaecke, L. (2014). Oxidative Stress and Inflammation Response Following Aerobic Exercise: Role of Ethnicity. *Int J Sports Med*, 35 (10), 822-827.
- 35. Park, S. Y., Gifford, J. R., Andtbacka, R. H., Hyngstrom, J. R., Garten, R. S., Diakos, N. A., . . . Richardson, R. S. (2014). Cardiac, Skeletal, and smooth muscle mitochondrial respiration: Are all mitochondria created equal? *Am J Physiol Heart Circ Physiol*, 307 (3): H346-352.
- 36. Rossman, M. J., **Garten, R. S.**, Venturelli, M., Amann, M., & Richardson, R. S. (2014). The role of active muscle mass in determining the magnitude of peripheral fatigue during dynamic exercise. *Am J Physiol Regul Integr Comp Physiol*, 306 (12): R934-940.
- 37. Garten, R. S., Groot, H. J., Rossman, M. J., Gifford, J. R., & Richardson, R. S. (2014). The role of muscle mass in exercise-induced hyperemia. *J Appl Physiol (1985), 116*(9), 1204-1209.
- 38. Ives, S. J., Harris, R. A., Witman, M. A., Fjeldstad, A. S., Garten, R. S., McDaniel, J., ... Richardson, R. S. (2014). Vascular dysfunction and chronic obstructive pulmonary disease: the role of redox balance. *Hypertension*, 63(3), 459-467.
- Rossman, M. J., Garten, R. S., Groot, H. J., Reese, V., Zhao, J., Amann, M., & Richardson, R. S. (2013). Ascorbate infusion increases skeletal muscle fatigue resistance in patients with chronic obstructive pulmonary disease. *Am J Physiol Regul Integr Comp Physiol, 305*(10), R1163-1170.
- 40. Webb, H. E., **Garten, R. S.**, McMinn, D. R., Beckman, J. L., Kamimori, G. H., & Acevedo, E. O. (2011). Stress hormones and vascular function in firefighters during concurrent challenges. *Biol Psychol*, *87*(1), 152-160.
- 41. Goldfarb, A. H., **Garten, R. S.**, Cho, C., Chee, P. D., & Chambers, L. A. (2011). Effects of a fruit/berry/vegetable supplement on muscle function and oxidative stress. *Med Sci Sports Exerc, 43*(3), 501-508.
- Huang, C. J., Webb, H. E., Garten, R. S., Kamimori, G. H., & Acevedo, E. O. (2010). Psychological stress during exercise: lymphocyte subset redistribution in firefighters. *Physiol Behav*, 101(3), 320-326.
- Huang, C. J., Webb, H. E., Garten, R. S., Kamimori, G. H., Evans, R. K., & Acevedo, E. O. (2010). Stress hormones and immunological responses to a dual challenge in professional firefighters. *Int J Psychophysiol*, *75*(3), 312-318.
- 44. Webb, H. E., McMinn, D. R., Garten, R. S., Beckman, J. L., Kamimori, G. H., & Acevedo, E. O. (2010). Cardiorespiratory responses of firefighters to a computerized fire strategies and tactics drill during physical activity. *Appl Ergon*, *41*(3), 376-381.

- 45. Huang, C. J., **Garten, R. S.**, Wade, C., Webb, H. E., & Acevedo, E. O. (2009). Physiological responses to simulated stair climbing in professional firefighters wearing rubber and leather boots. *Eur J Appl Physiol, 107*(2), 163-168.
- 46. Goldfarb, A. H., **Garten, R. S.**, Chee, P. D., Cho, C., Reeves, G. V., Hollander, D. B., ... Kraemer, R. R. (2008). Resistance exercise effects on blood glutathione status and plasma protein carbonyls: influence of partial vascular occlusion. *Eur J Appl Physiol*, *104*(5), 813-819.

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Agency	Funding	Role	Grant Title
2012			
National Institute of Health - Ruth L. Kirschstein National Research Service Awards for Individual Postdoctoral Fellows (Parent F32)	\$38,500/year + fringe benefits (Not Funded)	PI	Vascular Function and Aging; Impact of Exercise and Oxidative Stress
Veteran Affairs R&D Career Development Program (Career Development Award-1)	\$133,567 + fringe benefits ( <b>Funded</b> )	PI	Advanced Associated Health Research Fellowship in Geriatrics (Sponsor – Russell Richardson)
2016			
VCU Wright Center for Clinical and Translational Research's Endowment Fund – Small Group	\$50,000 (Not Funded)	PI	Examining Prolonged Sitting-Induced Lower Limb Vascular Dysfunction: The Effect of Age and Oxidative Stress
VCU Wright Center for Clinical and Translational Research's Endowment Fund – Multi-School	\$130,000 (Not Funded)	Co-l	Improving Sarcopenia in Patients with Decompensated Cirrhosis from Nonalcoholic Steatohepatitis.
National Institute of Health - Exploratory/Developmental Research Grant Award (R21)	\$400,000 (Not Funded)	Co-l	Exercise Regulation of Metabolic Dysfunction and HIF-1α in Obesity Driven Nonalcoholic Steatohepatitis.
VCU Wright Center for Clinical and Translational Research's Endowment Fund – Small Group <b>2017</b>	\$25,200 ( <b>Funded</b> )	PI	Posttraumatic Stress Disorder, Vascular Function, and Exercise Tolerance: Insight From Small and Large Muscle Mass Exercise

National Institute of Health -	\$398,448	PI	The Effect of Prolonged Sitting on
Exploratory/Developmental	(Not Funded)		Peripheral Vascular Function in Older
Research Grant Award (R21			Adults
- National Institute of Aging)			
American Federation of	\$100,000	PI	The Effect of Prolonged Sitting on
Aging Research – Letter of	(Not		Peripheral Vascular Function in Older
Intent	Selected)		Adults
VCU College of Humanities	\$20,000	PI Aging, Sedentary Activity and	
and Sciences - Catalyst	(Not Funded)		Vascular Health: The Role of Nitric
Award			Oxide
VCU College of Humanities	\$20,000	Co-l	The Causes and Consequences of
and Sciences - Catalyst	(Not Funded)		Poor Sleep Quality: The Impact of
Award			Physical (In)Activity
2018			
VCU College of Humanities	\$20,000	PI	Age and Sex Limitations to Vascular
and Sciences - Catalyst	(Funded)		Plasticity: Insight from Single Leg
Award			Exercise Training
VCU College of Humanities	\$5,000	Co-l	The Causes and Consequences of
and Sciences - Seed Award	(Funded)		Poor Sleep Quality: The Impact of
			Physical (In)Activity
VCU College of Humanities	\$5,000	PI	Examining the Role of Sleep Quality
and Sciences - Seed Award	(Not Funded)		and Biological Sex as Modulators of
			Vascular Health in Individuals with
			High Anxiety
VCU Wright Center for	\$75,000	PI –	Improving Exercise Tolerance and
Clinical and Translational	(Not Funded)	Antonio	Aerobic Capacity in Heart Failure
Research KL2 Program		Abbate	Patients: Efficacy of Combining
		(primary	Aerobic Training and Inflammatory
		mentor)	Blockade
VCU Pauley Heart Center -	\$40,000	PI –	Improving Exercise Tolerance and
Pilot Grant	(Not Funded)	Antonio	Aerobic Capacity in Heart Failure
		Abbate	Patients: Efficacy of Combining
		(primary	Aerobic Training and Inflammatory
		mentor)	Blockade
2019			
American Federation of	\$100,000	PI	Age and Sex Limitations to Vascular
Aging Research – Letter of	(Not		Plasticity: Insight from Single Leg
Intent	Selected)		Exercise Training

National Institute of Health -	\$399,591	PI	Age and Sex Limitations to Vascular
Exploratory/Developmental	(Not Funded)		Plasticity: Insight from Single Leg
Research Grant Award (R21			Exercise Training
- National Institute of Aging)			
American Pecan Council	\$447,395	PI	Acute and Chronic Pecan Intake on
	(Not Funded)		Peripheral Vascular Function and
			Body Composition
VCU Wright Center for	\$130,000	Co-l	Non-pulmonary contributors to
Clinical and Translational	(Not Funded)		exercise intolerance in patients
Research's Endowment	, , , , , , , , , , , , , , , , , , ,		with cystic fibrosis
Fund – Multi-School			
VCU Wright Center for	\$49,968	Co-l	Non-pulmonary contributors to
Clinical and Translational	(Funded)		exercise intolerance in patients
Research's Endowment	( )		with cystic fibrosis
Fund – Small Group			
American Heart Association	\$62.032	Sponsor	Accelerated Vascular Aging In PTSD:
– Predoctoral Fellowship	(Not Funded)	-1	The Role Of Oxidative Stress
· · · · · · · · · · · · · · · · · · ·	(Hot Fundou)		
American Heart Association	\$62,032	Sponsor	Mitochondrial Oxidative Stress as a
<ul> <li>Predoctoral Fellowship</li> </ul>	(Not Funded)		Contributor to Vascular Racial
			Differences
2020			
California Walnut	\$447,395	PI	Acute and Chronic Walnut Intake on
Commission – Letter of	(Not		Peripheral Vascular Function and
Intent	Selected)		Body Composition
The Peanut Institute	\$229,917	PI	Acute and Chronic Peanut Intake on
	(Not Funded)		Peripheral Vascular Function and
			Body Composition
Cystic Fibrosis Foundation	\$160,000	Co-l	Targeting Exercise Intolerance in
	(Not Funded)		Cystic Fibrosis: A Novel Approach
Sigma Xi – Grants in Aid of	\$1,350	Sponsor	The Impact of High Salt Intake on
Research	(Not Funded)	-	Oxidative Stress, Vascular Function,
	7		and Exercise Tolerance in Salt-
			Resistant Individuals
Sigma Xi – Grants in Aid of	\$860	Sponsor	Examining Sympathetic Vascular
Research	(Not Funded)		Transduction in Individuals with PTSD:
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American Heart Association – Predoctoral Fellowship	\$62,032 (Not Funded)	Co- Sponsor	The Influence of Mitochondrial Derived Reactive Oxygen Species on Cardiovascular Health in Patients with Chronic Obstructive Pulmonary Disease	
2021				
National Institute of Health (National Heart, Lung, and Blood Institute)	\$1,128,601 (Not Funded)	PI	The Role of Oxidative Stress in PTSD- Induced Vascular Dysfunction	
Children's Hospital of Richmond at VCU - Child Health Research Institute Collaborative Grant Program	\$49,520 ( <b>Funded</b> )	Co-l	The Children's Cardiovascular Health and Early Stress Study (CCHESS)	
FDA/NIH Rapid Response Project	\$100,000 ( <b>Funded</b> )	Co-I	Understanding the Impact of Cartridge-Based Electronic Cigarettes and Generated Aerosols on Cardiopulmonary Health	
American Heart Association – Predoctoral Fellowship	\$64,072 ( <b>Funded</b> )	Co- Sponsor	The Influence of Mitochondrial Derived Reactive Oxygen Species on Cardiovascular Health in Patients With Chronic Obstructive Pulmonary Disease	
Commonwealth Health Research Board	\$196,814 (Not Funded)	PI	The Role of Oxidative Stress in PTSD- Induced Vascular Dysfunction	
VCU CHS Faculty Council Research & Professional Development Grant	\$1000 ( <b>Partially</b> <b>Funded</b> - \$500)	PI	The Role of Oxidative Stress in PTSD- Induced Vascular Dysfunction	
National Institute of Health (National Heart, Lung, and Blood Institute)	\$116,676 (Pending)	Co- Sponsor	The Influence of Mitochondrial Derived Reactive Oxygen Species on Cardiovascular Health in Patients With Chronic Obstructive Pulmonary Disease	
2022				
American Heart Association – Transformational Project	\$279,837 (Not Funded)	PI	The Role of Oxidative Stress in PTSD- Induced Vascular Dysfunction	

American Heart Association – Transformative Project	\$299,895 (Not Funded)	Co-l	The Children's Cardiovascular Health and Early Stress Study (CCHESS)
National Institute of Health	\$426,938 (Not Funded)	Co-l	Children's Cardiovascular Health and Early Stress Study (CCHESS)
VHA Office of Research and Development's (ORD) Career Development Program – Career Development Award 2	(Pending)	Co- Mentor	Effects of Intranasal Testosterone with Trans-Spinal Stimulation Resistance Training via Telehealth on Neural and Cardiometabolic Systems After Spinal Cord Injury
American Heart Association – Predoctoral Fellowship	\$64,072 (Pending)	Co- Sponsor	The Impact of Chronic E-cigarette Usage in Microvascular Health: A Mechanistic Approach

# National and Regional Conference Presentations

# - mentored graduate student; \* - mentored undergraduate student

## Experimental Biology Conference – 2022

- Richardson, J. <sup>#</sup>, Weggen, J. <sup>#</sup>, Darling, A. <sup>#</sup>, Chiu, A. <sup>#</sup>, Decker, K. <sup>#</sup> and Garten, R. (2022), Examining Vascular Function and Oxidative Stress in Young Individuals with Generalized Anxiety Disorder. The FASEB Journal, 36:. https://doi.org/10.1096/fasebj.2022.36.S1.R3675
- Weggen, J.B. <sup>#</sup>, Hogwood, A.C. <sup>#</sup>, Decker, K.P. <sup>#</sup>, Darling, A.M. <sup>#</sup>, Chiu, A., Richardson, J. <sup>#</sup> and **Garten, R.S.** (2022), Examining Vascular Responses to Passive Movement in Premenopausal Females: Comparisons Across Sex and Menstrual Cycle Phase. The FASEB Journal, 36:. <u>https://doi.org/10.1096/fasebj.2022.36.S1.R5520</u>
- Decker, K. <sup>#</sup>, Weggen, J. <sup>#</sup>, Hogwood, A. <sup>#</sup>, Darling, A. <sup>#</sup>, Chiu, A. <sup>#</sup>, Richardson, J. <sup>#</sup> and Garten, R. (2022), High Sodium Intake Differentially Impacts Brachial Artery Flow Mediated Dilation When Evaluated with Reactive Versus Active Hyperemia. The FASEB Journal, 36:. <u>https://doi.org/10.1096/fasebj.2022.36.S1.R5142</u>

#### National American College of Sports Medicine Conference – 2020

- Chiu A<sup>#</sup>, Pederson L, Via JO, Bohmke NJ, Richardson J, Autler A<sup>\*</sup>, Reed HL<sup>\*</sup>, Henderson E<sup>\*</sup>, Franco RL, Garten RS. The Effects of a High Fat Meal on Blood Flow Regulation during Arm Exercise.
- Decker KP<sup>#</sup>, Kimmel MT<sup>\*</sup>, Reed HL<sup>\*</sup>, Chiu AH<sup>#</sup>, Hogwood AC<sup>#</sup>, Weggen JB<sup>#</sup>, Darling AM<sup>#</sup>, Garten RS. Effects of Dietary Sodium Intake on Blood Flow Regulation During Exercise in Salt Resistant Individuals.
- 6. Weggen JB<sup>#</sup>, Autler AS<sup>\*</sup>, Tuzzolo G<sup>\*</sup>, Darling AM<sup>#</sup>, Decker KP<sup>#</sup>, **Garten RS**. Vascular and Blood Flow Responses to Upper Limb Exercise in Individuals with Posttraumatic Stress Disorder.

#### Experimental Biology Conference – 2020

- 7. **Garten RS**, Weggen J<sup>#</sup>, Hogwood A<sup>#</sup>, Decker K<sup>#</sup>, Darling A<sup>#</sup>. Vascular and Blood Flow Responses to Acute Upper Limb Exercise: Impact of Sex and Menstrual Cycle Phase.
- 8. Bisconti AV, Broxterman RM, Jarrett CL, Shields KL, Park SH, **Garten RS**, Wray DW and Richardson RS. The effect of tetrahydrobiopterin on microvascular function with advancing age assessed by passive leg movement.
- 9. Darling A<sup>#</sup>, Chiu A<sup>#</sup>, Henderson E<sup>\*</sup>, Autler AS, Weggen JB<sup>#</sup>, Decker KP<sup>#</sup> and **Garten RS**. Determining the Impact of Increased Physical Activity on Improving Sleep Quality in Young Adults.
- 10. Weggen JB<sup>#</sup>, Autler AS<sup>\*</sup>, Hogwood AC<sup>#</sup>, Darling AM<sup>#</sup>, Decker KP<sup>#</sup>, **Garten RS**. Vascular Dysfunction and Posttraumatic Stress Disorder: Examining the Role of Oxidative Stress and Sympathetic Activity.

#### Southeast and National American College of Sports Medicine Conference - 2019

- 11. R.S. Garten, D.L. Kirkman, P. Rodriguez-Miguelez. Novel Techniques to Assess Peripheral Vascular Function and Blood Flow Regulation in Health and Disease. <u>Symposium</u> <u>Presentation</u> at Southeast American College of Sports Medicine Conference, Greenville, SC.
- 12. A. Darling<sup>#</sup>, J. Weggen<sup>#</sup>, K. Decker<sup>#</sup>, A.C. Hogwood<sup>#</sup>, A. Michael<sup>\*</sup>, B. Imthurn<sup>\*</sup>, A. Mcintrye<sup>\*</sup>, and **R.S. Garten**. Aerobic Training and Vascular Protection: Insight From Altering Blood Flow Patterns.
- 13. J. Weggen<sup>#</sup>, A. Hogwood<sup>#</sup>, B. Imthurn<sup>\*</sup>, A. McIntyre<sup>\*</sup>, A. Darling<sup>#</sup>, K. Decker<sup>#</sup> and **R. S. Garten**. The Impact of Posttraumatic Stress Disorder On Peripheral Vascular Function.
- 14. AC Hogwood<sup>#</sup>, J Weggen<sup>#</sup>, A Darling<sup>#</sup>, B Imthurn<sup>\*</sup>, A McIntyre<sup>\*</sup>, K Decker<sup>#</sup>, and **RS Garten**. Vascular Protection in Response To Altered Shear Patterns At Different Menstrual Cycle Phases.
- 15. K. Decker<sup>#</sup>, P. Feliciano<sup>\*</sup>, M. Kimmel<sup>\*</sup>, A. Hogwood<sup>#</sup>, J. Weggen<sup>#</sup>, A. Darling<sup>#</sup>, A. Michael<sup>\*</sup>, and **R.S. Garten**. Sex Differences In Sitting-Induced Vascular Dysfunction: Evidence Of Augmented Antioxidant Defense.
- 16. Zuniga, TM.<sup>#</sup>; Slusher, AL; **Garten, RS**; Acevedo, EO. Aerobic Capacity And LPS-induced iNOS mRNA Expression In Leukocytes Of Healthy College-aged Males.
- 17. Gifford, JR; **Garten, R**; Weavil, J; Broxterman, R; Trinity, J; Richardson, R. (May 2019) Looking Beyond A-vo2 Difference: Peripheral Adaptations And Vo2Max In Trained And Untrained Adults.

## Experimental Biology Conference – 2019

- 18. K Bunsawat, SM Ratchford, HL Clifton, JK Theisen, Z Barrett-O'Keefe, RM Broxterman, JR Gifford, J Hydren, MJ Rossman, SJ Ives, JD Trinity, MAH Witman, RS Garten, DE Morgan, AD Nelson, RS Richardson, and DW Wray. Sex Differences in the Sympathetic Restraint of Skeletal Muscle Blood Flow in the Human Leg Vasculature.
- 19. L Theisen, SM Ratchford, HL Clifton, K Bunsawat, Z Barret-O'keefe, RM Broxterman, JR Gifford, J Hydren, MJ Rossman, SJ Ives, MAH Witman, JD Trinity, **R Garten**, DE Morgan, AD Nelson, RS Richardson, and DW Wray. Role of Alpha-1 Adrenergic Vasoconstriction in Regulating Skeletal Muscle Blood Flow during Single Leg Knee Extension Exercise with Advancing Age.

#### Southeast and National American College of Sports Medicine Conference - 2018

- 20. Scott M., A. Hogwood<sup>#</sup>, R. Fralin<sup>#</sup>, D. Lee<sup>\*</sup>, J. Weggen<sup>#</sup>, T. Zuniga<sup>#</sup>, and **R.S. Garten**. The Impact Of Sleep Quality On Peripheral Vascular Function In Young Adults.
- 21. Decker K. <sup>#</sup>, A. Hogwood<sup>#</sup>, J. Weggen<sup>#</sup>, R. Maniyar<sup>\*</sup>, A. Darling<sup>#</sup>, A. Michael<sup>\*</sup> and **R.S. Garten**. Examining Peripheral Hemodynamics During Handgrip Exercise In Varsity Rowers.
- 22. Fico, B; Garten, R; Zourdos, M; Whitehurst, M; Ferrandi, P; Dodge, K; Pena, G; Rodriguez, A; Huang, C. The Comparison Of High-intensity Interval Exercise Vs. Continuous Moderate-intensity Exercise On C1q/tnf-related Protein-9 Expression And Flow-mediated Vasodilation In Obese Individuals.
- 23. Hogwood A.C.<sup>#</sup>, J. Weggen<sup>#</sup>, C. Fralin<sup>#</sup>, D. Lee<sup>\*</sup>, M. Scott, and **R. S. Garten**. Oxidant-Antioxidant Balance And Peripheral Vascular Function: The Impact Of Chronic Antioxidant Supplementation.
- 24. Weggen J.B.<sup>#</sup>, A. Hogwood<sup>#</sup>, R. Fralin<sup>#</sup>, K. LaRosa<sup>\*</sup>, A. Michael<sup>\*</sup>, and **R.S. Garten**. Impact Of Aerobic Capacity On Prolonged Sitting-Induced Vascular Dysfunction.
- 25. Fralin R.C. <sup>#</sup>, A.C. Hogwood<sup>#</sup>, J. Weggen<sup>#</sup>, D. Lee<sup>\*</sup>, M. Scott, and **R.S. Garten**. Examining The Role Of Sympathetic Activation During A Prolonged Sitting Bout.

## Southeast and National American College of Sports Medicine Conference - 2017

- 26. T. Zúñiga<sup>#</sup>, M.C. Scott, A. Hogwood<sup>#</sup> and **Garten R.S.** The Effect Of High Intensity Interval Exercise On Prolonged Sitting-Induced Vascular Dysfunction.
- 27. **Garten, R.S.**, Scott, M.C., Zúñiga, T.<sup>#</sup>, and Hogwood, A.C<sup>#</sup>. Prolonged Sitting-Induced Lower Limb Vascular Dysfunction: The Effect of Oxidative Stress.
- 28. Groot, HJ; Broxterman, R; **Garten, R**; Rossman, M; Gifford, J; Kwon, O; Hydren, J; Richardson, R. Reliability of the Passive Leg Movement Assessment of Vascular Function.
- 29. Rossman, M; Groot, H.; **Garten, R**; Wang, Ĕ; Helgerud, J; Hoff, J; Richardson, R. Physical Fitness Protects Against Age-Related Vascular Dysfunction in the Lower Limb.

## Experimental Biology Conference – 2017

30. SM Ratchford, HL Clifton, ZM Barret-O'Keefe, RM Broxterman, JR Gifford, JR Hydren, MJ Rossman, SJ Ives, JD Trinity, MAH Witman, **RS Garten**, D Morgan, AD Nelson, RS Richardson, and DW Wray. Role of Alpha-Adrenergic Vasoconstriction in Regulating Skeletal Muscle Blood Flow during Single Leg Knee Extension Exercise with Advancing Age.

#### National American College of Sports Medicine Conference - 2016

31. Witman, M; **Garten, R**; Gifford, J; Groot, H; Trinity, J; Stehlik, J; Nativi, J; Selzman, C; Drakos, S; Richardson, R. Peripheral Vascular Dysfunction Following Left Ventricular Assist Device Implantation: Insight from Passive Leg Movement.

## Experimental Biology Conference – 2016

32. **Garten, R.S.**, Lee, J.F., H.J. Groot, M.J. Rossman, Clifton, H.L., Wray, D.W., Richardson R.S. Rescuing Age-Related Vascular Dysfunction: The Impact of Tetrahydrobiopterin and Antioxidants.

- 33. J Gifford, **R Garten**, J Trinity, G Layec, and R Richardson. Skeletal Muscle Mitochondrial Density and Quality in Untrained and Endurance-Trained Humans.
- 34. MJ Rossman, HJ, **RS Garten**, M Witman, and R Richardson. Vascular Function Assessed by Passive Leg Movement and Flow-Mediated Dilation: Evidence of Construct Validity.
- 35. JD Trinity, JF Lee, **RS Garten**, ZB O'Keefe, G Layec, DW Wray, and RS Richardson. Vasodilation and Hyperemia during Passive Limb Movement: Impact of Acute Sympathetic Activation.
- 36. JC Weavil, SK Sidhu, TS Mangum, TS Thurston, **RS Garten**, RS Richardson, and M Amann. Impact of Aging on Fatigue and Corticomotoneuronal Excitability during Small Muscle Mass Exercise.
- 37. DR Machin, HL Clifton, **RS Garten**, JR Gifford, RS Richardson, T Frech, DW Wray, and AJ Donato. Impaired exercise-induced forearm blood flow in patients with systemic sclerosis (SSc) is restored after acute tetrahydrobiopterin (BH4) supplementation.
- 38. R. Broxterman, HJ Groot, M J Rossman, **RS Garten**, M Venturelli, OS Kwon, JR Hydren, JR Gifford, and RS Richardson. Within-Day Test-Restest Reliability of the Single Passive Leg Movement Technique: Evidence of Clinical Utility.
- 39. HL Clifton, **RS Garten**, JF Lee, MJ Rossman, JR Clifford, JR Hydren, J Stehlik, RS Richardson, and DW Wray. The Impact of Acute Oral Tetrahydrobiopterin on Vascular Function in Heart Failure Patients with Reduced Ejection Fraction.

#### Southeast American College of Sports Medicine Conference - 2016

40. **Garten, R.S.**, H.J. Groot, M.J. Rossman, J.R. Gifford, Richardson R.S. Examining Exercise-Induced Blood Flow in Groups with Differing Muscle Masses: Implications for Aging and Gender Studies.

## National American College of Sports Medicine Conference - 2015

- 41. **Garten, R.S.**, H.J. Groot, M.J. Rossman, J.R. Gifford, Richardson R.S. Aerobic Capacity Augments Passive Limb Movement-Induced Hyperemia.
- 42. Groot, H; Rossman, M; **Garten, R**; Wang, E; Helgerud, J; Hoff, J; Richardson, R. Physical Activity And Passive Leg Movement-Induced Vasodilation: Implications For Exercise And Vascular Aging.
- 43. Rossman, M; Trinity, J; **Garten, R**; Ives, S; Conklin, J; Barrett-O'Keefe, Z; Witman, M; Bledsoe, A; Reese, V; Zhao, J; Amann, M; Wray, D; Richardson, R. Limb Blood Flow During Exercise in Patients with COPD: The Impact of Antioxidants.
- 44. Gifford, J; **Garten, R**; Mangum, T; Weavil, J; Nelson, A; Trinity, J; Witman, M; Layec, G; Hart, C; Rossman, M; Etheredge, C; Groot, J; Richardson, R. Oxygen Delivery Limitations And Muscle Mitochondrial Oxygen Consumption At VO2max: A Case Of Untapped Potential..

## National American College of Sports Medicine Conference - 2014

45. **Garten, R.S.**, Rossman, M.J., Trinity, J.T., Ives, S.J., Reese, V., Richardson, R.S. Skeletal Muscle Free Radical Outflow During Submaximal Exercise. The Effect Of Age.

## National American College of Sports Medicine Conference - 2013

46. **Garten, R.S.**, H.J. Groot, M.J. Rossman, J.R. Gifford, Richardson R.S. Is Normalizing Exercise-Induced Blood Flow for Muscle Mass Necessary?

National American College of Sports Medicine Conference - 2011

- 47. **Garten, R.S.**, Goldfarb A.H. FACSM, Crabb B.E., Gomashe C. Partial Vascular Occlusion Effect on Oxidative Stress Markers in Young Resistance Training Individuals.
- Southeast American College of Sports Medicine Conference 2009
- 48. **Garten, R.S.**, Goldfarb A.H. FACSM, Cho, C., Chee, P.D.M. Creatine Kinase and Muscle Soreness Reponses to Eccentric Exercise: Effect of Fruit/Vegetable Concentrate Supplementation.
- National American College of Sports Medicine Conference 2008
- 49. **Garten, R.S.**, Kraemer, R.R. FACSM, Cho, C., Chee, P.D.M., Reeves, G.V., Hollander, D.B., Thomas, C., Francois, M., Goldfarb, A.H. FACSM. Resistance Exercise Effects on Blood Protein Carbonyls and Glutathione Status: Influence of Partial Vascular Occlusion.
- Southeast American College of Sports Medicine Conference 2008
- 50. **Garten, R.S.**, Kraemer, R.R. FACSM, Cho, C., Chee, P.D.M., Reeves, G.V., Hollander, D.B., Thomas, C., Francois, M., Goldfarb, A.H. FACSM. Effect of Light or Moderate Resistance Exercise With or Without Partial Vascular Occlusion on Blood Protein Carbonyls Levels.

Southeast American College of Sports Medicine Conference – 2007

51. **Garten, R.S.**, Webb, H.E., McMinn, D.R., Beckman, J.L., Kamimori, G.H., & Acevedo, E.O. Psychoneuroimmunological Responses to Dual Stressors.

# **Thesis/Dissertation Committees**

 Committee Chair: Kevin Decker, Rehabilitation and Movement Science Jenn Weggen, Rehabilitation and Movement Science
 Committee Member: Aaron Slusher, Rehabilitation and Movement Science Justin Canada, Rehabilitation and Movement Science Tiffany Zuniga, Health and Movement Sciences Anson Blanks, Rehabilitation and Movement Science Hannah Kotarski, Health and Movement Sciences Scott Schwartz, Health and Movement Sciences Cory Scott, Rehabilitation and Movement Science Lauren Pederson, Rehabilitation and Movement Science Tijana Simovic, Rehabilitation and Movement Science

## **Undergraduate Research Mentoring**

Undergraduate Research Opportunities Program Morgan Kimmel (funding = \$2000) <u>Project Title:</u> High Sodium Intake, Vascular Function, and Exercise Tolerance: The Role of Oxidative Stress Gina Tuzzolo (funding = \$2000) <u>Project Title:</u> Investigating the Impact of Posttraumatic Stress Disorder on Peripheral Vascular Function

#### VCU Clinical Experience – Undergraduate Internships (and Hours Completed)

Ashley Darling	360 hours
Austin Michael	360 hours
Patrick Feliciano	360 hours
Eric Henderson	360 hours
Aaron Autler	360 hours
Austin Hogwood	240 hours
Ruhi Maniyar	240 hours
Kathryn LaRosa	240 hours
David Lee	240 hours
Brandon Imthurn	240 hours
Andrew Mcintyre	240 hours
Morgan Kimmel	240 hours
Mena Estafanous	240 hours
Lakshana Logeswaran	240 hours
Alexander Chiu	240 hours
Jacob Nguyen	240 hours
Jacob Richardson	240 hours
Gina Tuzzolo	240 hours
Hunter Reed	240 hours
Mathushana Logeswaran	240 hours
Payal Thakar	240 hours
Andrew Irving	240 hours
Metasebia Ermias	240 hours
Derek Strayhorn	240 hours
Victoria Chege	240 hours
Sophia Lee	240 hours
Arya Sultani	120 hours
Brvnn Richardson	30 hours

VCU Clinical Experience – High School Internships (and Hours Completed) Conrad Tan – Summer 2018 and 2019 (320 hours)

# **Courses Taught**

#### Virginia Commonwealth University

REMS 703 – Cardiovascular Exercise Physiology REMS 701 – Advanced Exercise Physiology HEMS 610 – Laboratory Techniques in Movement Sciences HPEX 495/496 – Clinical Experience IV HPEX 475 – Cardiovascular Pathophysiology and Pharmacology HPEX 470 – Exercise Programming and Leadership HPEX 441 – Assessment and Exercise Intervention HPEX 440 – Chronic Disease and Exercise Management HPEZ 375 – Exercise Physiology Laboratory HPEZ 200 – Introduction to Strength, Endurance, and Flexibility Training

#### **UNC-Greensboro**

KIN 375 – Exercise Physiology KIN 375-L – Exercise Physiology Lab KIN 131 – Jogging

#### University of Mississippi

EL 124 - Racquetball

## **Professional Activities**

VCU Grant Academy (2018) – Office of Research and Innovation Faculty Success Program (2020) – National Center of Faculty Development and Diversity VCU Faculty Peer Mentoring Program (2021)

#### **Invited Talks**

C. Kenneth and Dianne Wright Center for Clinical and Translational Research's Discovery Dialogues seminar series. (August 2018) "Sitting on the Job: 'Discovering New Ways to Reduce the Negative Impact of Sedentary Behavior"

15th Annual Women's Health Research Day Symposium: "Sex Matters: At the Bench and the Bedside". (April 2019). Presentation section: **"Sex Differences in Vascular Protection"**.

VCU Student Health Grand Rounds (August 2019). "Sitting On the Job: Insight and Strategies to Reduce the Negative Impact of Sedentary Behavior."

## Media Coverage

Prolonged Sitting Is Awful For Your Health. These Tips Can Help. https://news.vcu.edu/article/Prolonged\_sitting\_is\_awful\_for\_your\_health\_These\_tips\_can\_help 6 Tips To Improve Your Health While Teleworking During The Coronavirus Outbreak https://news.vcu.edu/article/6\_tips\_to\_improve\_your\_health\_while\_teleworking\_during\_the\_cor onavirus

Scientists Trace Path From PTSD To Heart Disease - https://medicalxpress.com/news/2020-04-scientists-path-ptsd-heart-disease.html

Serious Endurance Training Makes Sitting Sort of OK https://www.outsideonline.com/2410522/sitting-endurance-training-research

Take a break: Study finds sitting for long periods is bad for circulation, regardless of individual fitness - <u>http://blog.cdnsciencepub.com/take-a-break-study-finds-sitting-for-long-periods-is-bad-for-circulation-regardless-of-individual-fitness/</u>

## Peer Reviewer

- > American Journal of Physiology Heart and Circulatory Physiology
- Antioxidants
- Clinical Physiology and Functional Imaging
- Journal of Sports Science and Medicine
- Journal of Applied Physiology
- Journal of Sports Sciences
- > Sports

## **Professional Memberships**

- American College of Sports Medicine (ACSM)
- American Heart Association (AHA)
- American Physiological Society (APS)