

Curriculum Vitae  
**Sarah Witkowski**

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## CONTACT INFORMATION

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## EDUCATION

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<b>Institution</b>	<b>Degree</b>	<b>Area</b>	<b>Years</b>
The University of Maryland Stephen Roth, Ph.D. Mentor Espen Spangenburg, Ph.D. Mentor	Post-doc	Exercise Physiology	June 2008-present
The University of Maryland James M. Hagberg, Ph.D. Mentor	Ph.D.	Kinesiology	September 2003-May 2008
The University of Delaware	M.S.	Exercise Science	August 1997-August 2000
The College of William & Mary	B.S.	Kinesiology	August 1991-May 1995

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## WORK EXPERIENCE

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2008 - present	Postdoctoral Research Associate, Molecular Systems and Functional Genomics Laboratories, Dept. of Kinesiology, Univ. of Maryland Adjunct Faculty, Department of Kinesiology
2006 - Spring 2008	Laboratory Coordinator, Exercise Testing Laboratory and Metabolic Testing Laboratory, University of Maryland
2003 – Fall 2006	Research Assistant, Gene Exercise Research Study, University of Maryland
2000 – 2003	Research Associate, Institute for Exercise and Environmental Medicine, Dallas, TX
Winter 1999	Research Team Member, National Senior Olympic Games Project

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## PUBLICATIONS

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Ri-Li G, **Witkowski S**, Zhang Y, Alfrey C, Sivieri M, Karlsen T, Resaland GK, Stray-Gundersen J, Levine BD. Determinants of erythropoietin release in response to short term, hypobaric hypoxia. J Appl Physiol. 92 (6), 2361-2367, 2002.

Wilson TE, Cui J, Zhang R, **Witkowski S**, Crandall CG. Skin Cooling maintains cerebral blood flow velocity and othostatic tolerance during tilting in heated humans. J Appl Physiol 93: 85-91, 2002.

Ri-Li G, Chase PJ, **Witkowski S**, Wyrick BL, Stone JA, Levine BD, and Babb TG. Obesity: associations with acute mountain sickness. Ann of Internal Medicine, Aug 19; 139(4):253-7, 2003.

Cui J, Zhang R, Wilson TE, **Witkowski S**, Crandall CG, Levine BD. Nitric oxide synthase inhibition does not affect regulation of muscle sympathetic nerve activity during head-up tilt. American Journal of Physiology: Heart and Circulatory Physiology. 285:H2105-H2110, 2003.

Jedlickova K, Stockton DW, Chen H, Stray-Gundersen J, **Witkowski S**, Ri-Li G, Jelinek J, Levine BD, Prchal JT. Search for genetic determinants of individual variability of the erythropoietin response to high altitude. Blood Cells and Molecular Diseases, Sep-Oct;31(2):175-82, 2003.

Fu Q, **Witkowski S**, Levine BD. Vasoconstrictor reserve and sympathetic neural control of orthostasis. Circulation, Nov 2;110(18):2931-7, 2004.

Zhang R, Wilson TE, **Witkowski S**, Cui J, Crandall CG, Levine BD. Inhibition of nitric oxide synthase does not alter dynamic cerebral autoregulation in humans. American Journal of Physiology: Heart and Circulatory Physiology, Mar;286(3):H863-9, 2004.

Fu Q, **Witkowski S**, Okazaki K, Levine BD. Effects of gender and hypovolemia on sympathetic neural responses to orthostatic stress. Am J Physiol Regul Integr Comp Physiol, Jul;289(1):R109-16, 2005.

Fu Q, Zhang R, **Witkowski S**, Arbab-Zadeh A, Prasad A, Okazaki K, Levine BD. Persistent sympathetic activation during chronic antihypertensive therapy: A potential mechanism for hypertension morbidity or treatment failure? Hypertension, Apr;45(4):513-21, 2005.

**Witkowski S** and Hagberg JM. Progenitor Cells and Age: Can we Fight Aging with Exercise? J Appl Physiol. 102 (3): 834-835, 2007.

Zhang R, **Witkowski S**, Fu Q, Claassen JA, Levine BD Cerebral hemodynamics after short and long-term reduction in blood pressure in mild and moderate hypertension Hypertension. 49:1-7, 2007.

Claassen JA, Zhang R, Fu Q, **Witkowski S**, Levine BD. Transcranial Doppler estimation of cerebral blood flow and cerebrovascular conductance during modified rebreathing. J Appl Physiol. March; 102: 870-877, 2007.

Deeny SP, Poeppe D, Zimmerman JB, Roth SM, Brandauer J, **Witkowski S**, Hearn JW, Ludlow AT, Contreras-Vidal JL, Brandt J, Hatfield BD. Exercise, APOE, and working memory: MEG and behavioral evidence for benefit of exercise in middle-aged e4 carriers. Biol Psychol. 2008 May; 78 (2):179-87.

Ludlow AT, Zimmerman JB, **Witkowski S**, Hearn JW, Hatfield BD, Roth SM. Relationship between physical activity, telomere length, and telomerase activity in peripheral blood mononucleocytes. Med Sci Sports Exerc. 2008 Oct; 40 (10):1764-71.

**Witkowski S** and Spangenburg EE. Reduced Physical Activity and the Retired Athlete: a dangerous combination? Br J Sports Med. 2008 Dec;42 (12):952-3.

Jenkins NT, **Witkowski S**, Spangenburg EE, Hagberg JM. Effects of acute and chronic endurance exercise on intracellular nitric oxide in putative endothelial progenitor cells: Role of NADPH oxidase. AJP Heart and Circulatory Physiology. *Accepted*. August 2009.

Lockard MM, **Witkowski S**, Spangenburg EE, Jenkins NT, Obisesan TO, Hagberg JM. The Effect of Thrombin on Putative Endothelial Progenitor Cells with Exercise and Exercise Training. J Appl Physiol. *In Revision*. May 2009.

McKenzie JA, **Witkowski S**, Ludlow AT, Roth SM, and Hagberg JM AKT1 G205T Genotype Influences Obesity-Related Outcomes and Their Responses to Aerobic Exercise Training. Metabolism. *Submitted* September 2009.

Jenkins NT, McKenzie, JA, Damcott, CM, **Witkowski S**, and Hagberg, JM. Endurance exercise training effects on body fatness, VO<sub>2</sub>max, HDL-C subfractions, and glucose tolerance are influenced by a *PLIN* haplotype in older Caucasians. J Appl Physiol. *Submitted*.

**Witkowski S**, Lockard MM, Jenkins NT, Obisesan TO, Spangenburg EE, Hagberg JM. Relation of circulating progenitor cells to endothelial function and oxidative stress with long term training and short term detraining in older men. Clinical Sci. (Lond.) September 1 2009.

Jenkins NT, McKenzie JA, Hagberg JM, **Witkowski S**. Plasma fetuin-A concentrations in young and older high- and low-active men. Atherosclerosis. *Submitted*.

## **RESEARCH PRESENTATIONS**

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**Witkowski S**, Zhang R, Zuckerman JH, Wilson TE, Crandall CG, Levine BD. Hemodynamic responses to sustained infusion of L-NMMA in humans. Poster presentation for the ACSM Texas affiliate meeting, 2001.

**Witkowski S**, Karlsen T, Resaland GK, Sivieri M, Yates R, Ri-Li G, Stray-Gundersen J, Levine BD. Optimal Altitude for "Living High-training Low". Poster presentation for the national ACSM meeting. MSSE, 33:S292, 2001.

Palmer MD, Perhonen M, Zuckerman JH, **Witkowski S**, Zhang R, Levine BD. Prolonged exercise training during head-down tilt bedrest preserves upright exercise capacity. Poster presentation for the national ACSM meeting. MSSE. 33:S299, 2001.

**Witkowski S**, Chen H, Stray-Gundersen J, R.L. G, Alfrey C, Perchal JT, Levine BD. Genetic marker for the erythropoietic response to altitude. Poster presentation for the national ACSM meeting. MSSE 34: S246, 2002.

Chase PJ, Ri-Li G, **Witkowski S**, Wyrick BL, Babb TG. Comparison of two methods for measuring hypercapnic ventilatory response in men. Poster presentation for the national ACSM meeting. MSSE, 34:S154, 2002.

Palmer MD, Perhonen M, Zuckerman JH, **Witkowski S**, Zhang R, Levine BD Prolonged exercise training during head-down bedrest coupled with dextran infusion prevents orthostatic intolerance. Poster presentation for the national ACSM meeting. MSSE, 34:S112, 2002.

Truijens MJ, Dow J, Cabayo J, Palmer MD, **Witkowski S**, Chase PJ, Toussaint HM, Levine BD. The effect of high intensity hypoxic training on sea-level swimming performances. Poster presentation for the national ACSM meeting. MSSE, 34: S238, 2002.

Zhang R, Cooke WH, Zuckerman JH, Cui J, Wilson TE, **Witkowski S**, Crandall CG, Levine BD. Nitric oxide does not buffer blood pressure variability during head-up tilt. Poster presentation for the national ACSM meeting. MSSE, 34:S40, 2002.

Mason JJ, Marshak H, Fontamillas S, Provost-Craig M, **Witkowski S**. The inaugural winter senior olympic games: Physiological lessons from Lake Placid. Poster Presentation, 6<sup>th</sup> IOC World Congress, St. Louis, 2002.

**Witkowski S**, Zhang R, Ogawa M, Levine BD. Logistic modeling during normoxic rebreathing: A novel approach to evaluate cerebral vasomotor reactivity. Poster presentation for the national ACSM meeting MSSE, 35:S 43, 2003.

Arbab-Zadeh A, Dijk E, Palmer MD, Zuckerman JH, **Witkowski S**, Fu Q, Zhang R, Levine BD. Prolonged endurance training preserves cardiac compliance with aging. Poster presentation for the national ACSM meeting. MSSE, 35: S154, 2003.

Dijk E, Arbab-Zadeh A, Palmer MD, **Witkowski S**, Zuckerman JH, Zhang R, Levine BD. Exercise training and the Frank-Starling Mechanism: Prevention of diastolic dysfunction with aging. Poster presentation for the national ACSM meeting. MSSE, 35: S49, 2003.

Truijens MJ, Palmer MD, **Witkowski S**, Chase PJ, van Asseldonk E, Toussaint HM, Levine BD. The effect of high intensity, hypoxic training on VO<sub>2</sub> kinetics in well trained swimmers. Poster presentation for the national ACSM meeting. MSSE, 35:S335, 2003.

**Witkowski S**, McCole SD, Ferrell RE, Huberty A, Hagberg JM. Associations Between Exercise Hemodynamics in Postmenopausal Women and Gene Variants in the Renin-Angiotensin System. Poster presentation for the APS Intersociety Meeting: The Integrative Biology of Exercise, 2004.

Zhang R, **Witkowski S**, Martini E, Fu Q, Arbab-Zadeh A, Prasad A, Levine BD. Effects of acute and chronic antihypertensive therapy on cerebral hemodynamics in patients with mild hypertension. Poster presentation for the Experimental Biology meeting. FASEB, 18(4) part 1: A640, 2004.

Fu Q, Zhang R, Martini E, **Witkowski S**, Palmer MD, Prasad A, Okazaki K, Arbab-Zadeh A, Webster K, Levine BD. Baroreflex regulation of MSNA does not reset during chronic antihypertensive therapy: A potential mechanism for treatment failure? Poster presentation for the Experimental Biology meeting. FASEB, 18(4) part 1: A272, 2004.

Okazaki K, Ogawa J, Fu Q, Martini ER, **Witkowski S**, Zhang R, Levine BD. Improved cardiac autonomic function and augmented sympathetic activity after chronic antihypertensive therapy in patients with essential hypertension. Poster presentation for the Experimental Biology meeting. FASEB, 2005.

Okazaki K, Ogawa J, Fu Q, Martini ER, **Witkowski S**, Zhang R, Levine BD. Autonomic dysfunction in patients with hypertension: Is it related to the severity of elevated blood pressure? Poster presentation for the Experimental Biology meeting. FASEB 2005.

Brandauer J, Weiss EP, **Witkowski S**, Phares DA, and Hagberg JM. Effect of endurance exercise training on fasting and postprandial plasma adiponectin levels in older men and women. Poster presentation for the Experimental Biology meeting. FASEB, 2006.

Ludlow AT, Zimmerman JB, Hearn JW, **Witkowski S**, Hatfield BD, Roth SM. Relationship between exercise energy expenditure and telomere length and telomerase activity. Poster presentation for the Experimental Biology meeting. FASEB, 2007.

**Witkowski S**, Lockard MM, Harley R, Jenkins NT, Spangenburg EE, Hagberg JM. CD34+/KDR+ Endothelial Progenitor Cells and Vascular Health: Exercise and Detraining. APS Intersociety Meeting: Integrative Biology of Exercise, 2008.

Campbell KM, Wohlers LM, Sweeney SM, **Witkowski S**, Koves TK, Muoio DM, and Spangenburg EE. Increases in visceral fat mass in OVX mice is associated with decreases in skeletal muscle cytochrome c protein expression. Biochemistry of Exercise 14th International Conference, June 2009.

**Witkowski S**, Lovering RM, Le Roith D, Spangenburg EE. Incomplete Activation of the IGF-1 Signaling Pathway after High-frequency Electrically Stimulated Skeletal Muscle Contractions. American College of Sports Medicine, May 2010.

## **RESEARCH SUPPORT**

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T32 AG00268 Institutional Predoctoral Fellowship, Hagberg (PI)  
NIH/NIA, Institutional Predoctoral Training Grant  
Predoctoral training in exercise physiology and aging  
University of Maryland College Park School of Public Health

10/24/06 – 06/30/08

The effect of long-term exercise on endothelial progenitor cells in healthy humans.

The purpose of this dissertation project was to determine the effect of long-term endurance exercise training (>20 years) on the relationship between endothelial function and oxidative stress on endothelial progenitor cell number, colony-forming capacity, and senescence. To assess the effect of long-term exercise training independent of regular acute exercise, participants underwent 10-days of training cessation.

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## TEACHING

Fall 2009	Instructor, KNES 260: Science of Physical Activity and Cardiovascular Health. University of Maryland general education "Core" course
Summer 2009	Course Development: Online integration of physical activity courses (KNES 157).
Winter 2007	Co-instructor, KNES 260: Science of Physical Activity and Cardiovascular Health. University of Maryland general education "Core" course
Fall 2006	Related Coursework: KNES 689W: Teaching Kinesiology in Higher Education Course completed as part of PhD program of study requirement Dr. Catherine Ennis, Ph.D., instructor (see accompanying letter)
Fall 2004 – Fall 2007	Discussion leader, KNES 260: Science of Physical Activity and Cardiovascular Health University of Maryland
1998 – 2000	Instructor, Health, Nutrition and Exercise Science Department Field Hockey and Lacrosse Skills (skills course for Health and Physical Education majors) University of Delaware

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## MEMBERSHIPS AND CERTIFICATES

### Since:

2008	IACUC certification
2004	American Heart Association (AHA)
2004	American Physiological Society (APS)
1999	American College of Sports Medicine (ACSM)

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## PROFESSIONAL SERVICE

### Manuscript Review:

2008	Journal of Applied Physiology (ad hoc)
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### Committees:

Spring 2007	Graduate Student Council, Exercise Physiology Representative University of Maryland Department of Kinesiology
Fall 2006	Exercise Physiology Position Search Committee, Assistant Professor Tenure Track, Graduate Student Representative University of Maryland Department of Kinesiology
2006	Graduate Student Representative University of Maryland College of Health and Human Performance FY 2006-FY2010 Strategic Plan Review

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## AWARDS

2008	Dean's Graduate Scholar Award, Department of Kinesiology, University of Maryland College Park School of Public Health
2003 – 2008	NIH Pre-doctoral Fellowship
2001	Texas ACSM Student Research Presentation, Third place

## **COMMUNITY OUTREACH**

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- Spring 2007    Jump Rope for Heart, American Heart Association. Developed and ran an interactive curriculum for Kindergarten-6<sup>th</sup> grade students on exercise and CVD prevention.
- Winter 2008    NBC4 Health and Fitness Expo. Participated in University of Maryland School of Public Health information booth. Provided information and screening on blood pressure, BMI and cardiovascular disease.