

BIOGRAPHICAL SKETCH—Pilot Format (To Be Used for Specific FOAs only)

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME Arent, Shawn M.	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME (credential, e.g., agency login) smarent			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
University of Virginia, VA	B.A.	05/95	Psychology
Arizona State University, AZ	M.S.	08/98	Exercise Science
Arizona State University, AZ	Ph.D.	08/02	Exercise Science

NOTE: The Biographical Sketch may not exceed five pages. Follow the formats and instructions below.

A. Personal Statement

I am an Associate Professor in the Department of Kinesiology & Health and the Director of the Center for Health & Human Performance in the Institute for Food, Nutrition, and Health at Rutgers, The State University of New Jersey. I am also the Director of the Graduate Program in Kinesiology & Applied Physiology. I was recently recognized as the 2017 William J. Kraemer Outstanding Sport Scientist of the Year by the National Strength & Conditioning Association (NSCA). I am a Fellow in the American College of Sports Medicine (ACSM) and the International Society of Sports Nutrition (ISSN), a certified strength and conditioning specialist with distinction in the NSCA, and the current President of the ISSN. I am also a Senior Associate Editor with the Journal of Strength and Conditioning Research, the Journal of the International Society of Sports Nutrition, the Translational Journal of ACSM, and the Journal of Sport & Exercise Psychology. My research focuses on the relationship between physical activity and stress and the implications for health and performance. The primary emphasis of my research in this area involves examining underlying endocrine mechanisms and biomarkers related to the HPA axis and inflammation. I am specifically interested in the potential efficacy of acute and chronic resistance training as well as nutritional interventions for improving functional capabilities, mental health states, and the systemic response to stress in adolescents, athletes, and special populations. My recent work has primarily focused on physiological responses to training-related stressors and their contribution to optimal performance and recovery. My research has examined children, adolescents and individuals with chronic health conditions, as well as athletes.

B. Positions and HonorsProfessional Employment

1995 – 1995	Assistant Strength and Conditioning Coach, The University of Virginia
1997 – 1998	Graduate Assistant, Arizona State University
1998 – 2002	Graduate Associate, Arizona State University
2002 – 2004	Assistant Professor (non-tenure track), Rutgers University
2004 – 2010	Assistant Professor, Rutgers University
2010 – Present	Associate Professor, Rutgers University

Other Positions

2017 – Present	Sport Science Coordinator, Texas Rangers (MLB)
2017 – Present	President, International Society of Sports Nutrition
2014 – 2015	Head Exercise Physiologist, New Jersey Devils (NHL)
2014 – Present	Director, IFNH Center for Health & Human Performance
2014 – Present	Director, Graduate Program in Kinesiology & Applied Physiology
2014 – Present	Vice President, International Society of Sports Nutrition
2013 – Present	Senior Associate Editor, <i>Journal of Strength & Conditioning Research</i>
2014 – Present	Senior Associate Editor, <i>Journal of the International Society of Sports Nutrition</i>
2016 – Present	Senior Associate Editor, <i>Journal of Sport & Exercise Psychology</i>
2014 – Present	Medical & Scientific Advisory Board, Quest Diagnostics
2003 – Present	Rutgers University Human Subjects Institutional Review Board
2011 – Present	Member, Rutgers University Institutional Biosafety Committee
2014 – Present	Associate Member, Cancer Institute of New Jersey
2006 – Present	Graduate Faculty Member, Endocrinology and Animal Biosciences
2006 – Present	Graduate Faculty Member, Nutritional Sciences
2007 – Present	Graduate Faculty Member, Physiology and Integrative Biology

Professional Memberships

American College of Sports Medicine (Fellow)

International Society of Sports Nutrition (Fellow)

National Strength & Conditioning Association (Certified Strength & Conditioning Specialist with Distinction)

Honors

2017	NSCA William J. Kraemer Outstanding Sport Scientist of the Year Award
2016	Lifetime Achievement Award, US Army 3-314 th Battalion
2016	Director's Award for Scientific Excellence
2016	Fellow, International Society of Sports Nutrition
2010	Fellow, American College of Sports Medicine
2010	Presidential Fellowship for Teaching Excellence
2005/2006	Who's Who Among America's Teachers
2005-2006	NASPE (National Association for Sport and Physical Education) Outstanding Mentor of the Year Award Finalist
2004	AAHPERD Research Writing Award
2002	APA Division 47 Dissertation Award
2002	Finalist, Prince Alexandre de Merode Award, International Olympic Committee
1999-2002	Regents' Scholarship, Arizona State University
1999-2002	Graduate Scholarship, Arizona State University
2000	Gamma Beta Phi National Honor Society
1998	Phi Eta Sigma National Honor Society
1991-1995	Dean's List, University of Virginia

C. Contributions to Science

1. Some of my most well-established work has focused on global health concerns associated with physical activity. I completed the first meta-analytic review to examine the effects of physical activity on mood specifically in older adults. The findings were notable in that both aerobic and anaerobic (i.e., weight training) exercises were effective at improving mood both acutely and chronically. Previous conclusions had primarily focused on the benefits of aerobic exercise. I have also explored the important moderating causal role of physical activity in the obesity and depression relationship. These conclusions have formed the foundation for considerable work examining the clinical importance for the treatment of these co-morbid conditions. More recent work on the robust physiological, psychological,

economic, and social effects of exercise formed the basis for the worldwide activity initiative launched by Nike called “Designed to Move.”

- a. Arent, S.M., Landers, D.M., & Etnier, J.L. (2000). The effects of exercise on mood in older adults: A meta-analytic review. *Journal of Aging and Physical Activity*, 8, 407-430.
- b. Markowitz, S.M., Friedman, M.A., & Arent, S.M. (2008). Understanding the relation between obesity and depression: Causal mechanisms and implications for treatment. *Clinical Psychology: Science and Practice*, 15, 1-20.
- c. Bailey, R., Hillman, C., Arent, S.M., & Petitpas, A. (2013). Physical activity: An underestimated investment in human capital? *Journal of Physical Activity & Health*, 10, 289-308.
- d. Bailey, R., Hillman, C., Arent, S.M., & Petitpas, A. (2012). Physical activity as an investment in personal and social change: The Human Capital Model. *Journal of Physical Activity & Health*, 9, 1053-1055.

2. A large portion of my research has focused on the examination of biological stress thresholds both for mental health improvements as well as physiological responses and adaptations. My doctoral dissertation redefined the concept of resistance training “intensity” based on involvement of the HPA axis and autonomic systems. Not only did this help explain many of the conflicting findings of early resistance training and mental health research, but it also significantly contributed to the updated definition now used by ACSM. My lab has also found that lactate threshold serves as an affective “breakpoint” for both active and inactive individuals. This has helped to clarify some previous inconsistencies in the literature where percent $\text{VO}_{2\text{max}}$ has been used as the intensity classification. Lactate threshold is a potentially more useful, and individualized, breakpoint for prescribing exercise intensity for acute mental health benefits. In conjunction with colleagues at McMaster University in Canada, we have also provided evidence that ventilatory threshold might serve as an important breakpoint for affective responses during upper-body exercise. We have also jointly established that individuals with social physique anxiety display a lower HPA threshold in exercise settings, even after controlling for exercise intensity. One of our most recent studies found a dose-response effect for aerobic exercise and reductions in self-stimulatory behaviors in children with autism, which has notable implications for the use of physical activity to enhance the learning-environment for these individuals. All of these findings have served an important role in providing a physiological rationale for more precise individual exercise prescription.

- a. Arent, S.M., Landers, D.M., Matt, K.S., & Etnier, J.L. (2005). Dose-response and mechanistic issues in the resistance training and affect relationship. *Journal of Sport & Exercise Psychology*, 27, 92-110.
- b. Markowitz, S.M., & Arent, S.M. (2010). The exercise and affect relationship: Evidence for the dual-mode model and a modified opponent-process theory. *Journal of Sport & Exercise Psychology*, 32, 711-730.
- c. Martin Ginis, K.A., Strong, H.A., Arent, S.M., & Bray, S.R. (2012). The effects of threatened social evaluation of the physique on cortisol activity. *Psychology & Health*, 27, 990-1007.
- d. Barr, N.G., Martin Ginis, K.A., & Arent, S.M. (2011). The acute effects of arm ergometry on affect. *Comparative Exercise Physiology*, 8, 1-9.
- e. Schmitz, S.O., McFadden, B.A., Golem, D.L., Pellegrino, J.K., Walker, A.J., Sanders, D.J., & Arent, S.M. (2017). The effects of exercise dose on stereotypical behavior in children with autism. *Medicine & Science in Sports & Exercise*, 49, 983-990.

3. My primary interest in terms of exercise modality for application to both health and performance has been resistance exercise and much of my work in this area was a direct off-shoot of my dissertation. I have been particularly interested in its use for special populations. Our work in normal and overweight Hispanic adolescents not only demonstrated significant favorable effects on strength and body composition compared to a traditional physical education program, but it was also the first study to demonstrate a change in global self-esteem along with physical self-concept. This work has also extended into the areas of anxiety and depression, with resistance training demonstrating similar physiological mechanisms for response as anti-depressants and anxiolytic drugs. Along with colleagues in Canada, we have also shown that resistance training produces a differential response compared to aerobic exercise in individuals scoring high in social physique anxiety, a finding which has notable implications for prescription in this population. We also conducted the first study to demonstrate that

high-intensity resistance exercise produced a similar effect on postprandial triglyceride and free fatty acid metabolism in obese women when compared to more a more commonly prescribed moderate intensity aerobic exercise program. Furthermore, we demonstrated that resistance exercise had a larger favorable impact on growth hormone, which is often blunted in this population. A more recent study found that high-intensity resistance training combined with aerobic exercise was able to enhance lean mass gain and body fat loss, even while in a caloric deficit. The health-benefits were modestly enhanced with nutraceutical intervention.

- a. Velez, A., Golem, D.L., & Arent, S.M. (2010). The impact of a 12-week resistance training program on strength, body composition, and self-concept of Hispanic adolescents. *Journal of Strength & Conditioning Research*, 24, 1065-1073.
 - b. Martin Ginis, K.A., Strong, H.A., Arent, S.M., Bray, S.R., & Bassett-Gunter, R.L. (2014). The effects of aerobic- versus strength-training on body image among young females with pre-existing body image concerns. *Body Image*, 11, 219-227.
 - c. Arent, S.M., Walker, A.J., Pellegrino, J.K., Sanders, D.J., McFadden, B.A., Ziegenfuss, T.N., & Lopez, H.L. (IN PRESS). The combined effects of exercise, diet, and a multi-ingredient dietary supplement on body composition and adipokine changes in overweight adults. *Journal of the American College of Nutrition*.
 - d. Davitt, P.M., Arent, S.M., Tuazon, M.A., Golem, D.L., & Henderson, G.C. (2013). Postprandial triglyceride and free fatty acid metabolism in obese women after either endurance or resistance exercise. *Journal of Applied Physiology*, 114, 1743-1754.
 - e. Davitt, P.M., Henderson, G.C., Walker, A.J., & Arent, S.M. (IN PRESS). Acute post-exercise endocrine response during the postprandial period in obese women. *Comparative Exercise Physiology*.
4. In addition to examining the link between exercise, stress, and health (both physical and mental), I am also interested in the impact of training stressors on performance and physiological responses in athletes and how to maximize the effectiveness of these stressors without inducing overtraining or injury. This has constituted a major emphasis of my laboratory over the last decade. I have particularly focused on the role of ergogenic aids and nutritional interventions and have become recognized for my work on the science of soccer. My lab has studied the effects of post-workout nutrient and antioxidant ingestion on performance and markers of recovery in college football and college soccer players. These studies also provided information on the training stress and adaptations seen during preseason camp. We have also done examined the anti-inflammatory, anti-oxidant, endocrine, and in-session recovery and performance effects of a novel black tea extract on high-level athletes. This work also resulted in a patent on the performance and anti-oxidant effects of the tea extract. I have also done work on the biobehavioral effects of various supplements, including caffeine, creatine, and theacrine. These findings have particular relevance for both the performance and health of athletes. In addition to nutraceutical interventions, I have also studied the strength, power, and endurance effects of various neuromuscular-dentistry designed mouthguards. While we found some supported claims for one mouthguard, not all claims were supported by the others. We did, however, find that mouthguards did not interfere with performance, which is important for athletes in sports where their use is either mandatory or highly encouraged.
- a. Arent, S.M., Pellegrino, J., Williams, C.A., DiFabio, D., & Greenwood, J. (2010). Nutritional supplementation, performance, and oxidative stress in college soccer players. *Journal of Strength & Conditioning Research*, 24, 1117-1124.
 - b. Arent, S.M., Senso, M., Golem, D.L., & McKeever, K.H. (2010). The effects of theaflavin-enriched black tea extract on muscle soreness, oxidative stress, inflammation, and endocrine responses to acute anaerobic interval training: A randomized, double-blind, crossover study. *Journal of the International Society of Sports Nutrition*, 7, 11.
 - c. Doyle, T.P., Lutz, R.S., Pellegrino, J.K., Sanders, D.J., Arent, S.M. (2016). The effects of caffeine on arousal, response time, accuracy, and performance in Division I collegiate fencers. *Journal of Strength & Conditioning Research*, 30, 3228-3235.
 - d. Arent, S.M., McKenna, J.A., & Golem, D.L. (2010). Effects of a neuromuscular-dentistry designed mouthguard on muscular endurance and anaerobic power. *Comparative Exercise Physiology*, 7, 73-79.

- e. Arent, S.M., & Lutz, R.S. (2015). The psychology of supplementation in sport and exercise: Motivational antecedents and biobehavioral outcomes. In M. Greenwood, M.B. Cooke, T. Ziegenfuss, D.S. Kalman, & J. Antonio (Eds.). *Nutritional Supplements in Sports and Exercise* (2nd ed., pp. 23-48). Springer.

<https://scholar.google.com/citations?user=tQUjUIAAAAJ&hl=en&cstart=0&pagesize=20>

D. Recent Research Support

2016-2017 U.S. Army. Role: Co-Principal Investigator, *Use of the Ocular Oxidative Stress Monitor (OCOSMO) for detecting physiological strain in soldiers.*

Goal: To determine the efficacy of an alternative method of measuring oxidative stress in soldiers via ocular/retinal IR assessment that may have application in the field.

2016-2017 Compound Solutions, Inc. Role: Principal Investigator, *The Effects of Teacrine and Caffeine on Endurance and Cognitive Performance During a Simulated Soccer Game in High-level Male and Female Players.*

Goal: To compare the effects of Teacrine to caffeine on various measures of cognitive performance under fatiguing conditions of a simulated athletic contest in high level male and female soccer players. Secondary purposes are to determine whether there is a synergistic effect of Teacrine + caffeine as well as the impact on time-to-exhaustion in an “added time” scenario.

2015-2016 Quest Diagnostics. Role: Principal Investigator, *Performance, Training Load, and Biomarker Monitoring in Division I Female Soccer & Field Hockey Players.*

Goal 1: To determine the feasibility and validity of relatively non-invasive means (sweat patch and finger stick) to assess physiological and biochemical responses of female athletes. Goal 2: To determine the relationship of aerobic capacity, power, anaerobic power, body composition, and physiological workload to changes in biomarkers related to peak performance, overtraining, and nutritional status over the course of a competitive season in Division I athletes.

2014-2019 NIH/NCI K07CA174728 Role: Mentor (PI: K. Devine), *A Novel Mobile Health Fitness Program for AYA Childhood Cancer Survivors.*

Goal: To develop a mobile app with home-based exercise programs specifically designed for adolescent cancer survivors and to implement an intervention designed to increase physical and psychological functioning in this population.

2012-2014 Ultimate Wellness Systems, Inc. Role: Principal Investigator, *Safety and efficacy outcomes related to use of a proprietary weight-loss supplement in conjunction with a diet and exercise program in overweight adults.*

Goal: To examine the impact of 8 weeks of supplementation with a proprietary supplement designed to enhance weight-loss on health safety markers, weight, and body composition changes in overweight males and females when used in conjunction with a diet and exercise program.

2012-2013 Farnam Companies, Inc. Role: Co-Principal Investigator, *Pharmacokinetics and Pharmacodynamics of an Oral Superoxide Dismutase Supplement as a recovery aid for horses following strenuous exercise*

Goal: To determine the effects of an antioxidant derived from a variety of melon purported to be high in superoxidodismutase activity on performance and recovery from daily bouts of intense exercise in Standardbred mares.

2011-2017 United States Department of Agriculture (2011-68001-30170). Role: Co-Investigator, *HomeStyles: Shaping home environments and lifestyle practices to prevent childhood obesity: A randomized controlled trial.*

Goal: To develop and implement an in-home intervention targeting preschoolers and their parents to encourage obesity-preventing behaviors during childhood.