

Acute responses to the 7 Minute Workout

Sebastian Ring and Todd A. Astorino, Ph.D

Corresponding author: Todd Anthony Astorino, Ph.D

Professor, Department of Kinesiology California State University, San Marcos

333. S. Twin Oaks Valley Road, UNIV 320

San Marcos, CA 92096-0001

Phone: (760) 750-7351

Fax: (760) 750-3237

Email: astorino@csusm.edu

Department of Kinesiology, CSU—San Marcos, San Marcos, CA USA

Ring008@cougars.csusm.edu, astorino@csusm.edu

In 2011, the Centers for Disease and Control (CDC) reported that approximately 80% of adults do not get the proper amount of exercise (CDC, 2014) which is equivalent to 2.5 h/wk due to lack of time (Trost et al 2002). One exercise based-approach to combat this epidemic is high intensity interval training (HIIT) which consists of repeated bursts of intense exercise separated by brief recovery. Studies show that HIIT is a time efficient and robust alternative to aerobic exercise in many populations (Burgomaster et al 2008; Foster et al, 2015; Nybo et al, 2010). In fact, one smartphone application called the 7-min app has gained some popularity in the health and fitness industry because it claims to be “scientifically proven” to promote weight loss and improve cardiovascular function through brief intense bouts of total-body exercise, but without empirical data this is a misleading claim to make. The purpose of this study was to compare the acute physiological responses between a single session of cycling based high intensity cycling and 7-min app exercise.

Dr. Todd Astorino, Professor in Kinesiology at CSUSM, made it very clear that the number one reason as to why adults do not meet the CDC guidelines is due to: their lack of time. Using his advice, I looked for information using *Pubmed*'s advanced search option to specify all the journal articles by using keywords such as Blood Lactate concentration (BLa), oxygen consumption (VO₂), Rating of Perceived Exertion (RPE), Heart Rate (HR) or PPO (peak power output). With the growing popularity of HIIT, numerous articles were available, but only 2 articles reviewed changes in the variables in response to 7-min (Schmidt et al, 2016; Mattar et al, 2017). One study in healthy men and women showed no change in VO_{2max} or body -fat, while another study showed small reductions in body fat and waist circumference when 7Min was performed daily for 6 wk. However, no studies had examined the intensity of 7-min or compared it to any other high intensity interval exercises (HIIE). Therefore, I had to confer with Dr.

Astorino, who is a well-known expert in this field, about what would be important to measure to further narrow my search. Dr. Astorino and I concluded that VO_2 and BLa were the optimal outcomes to exemplify the acute physiological responses to HIE. The protocol used was based off the advisement of Dr. Astorino.

Although studies show HIIT to be a time efficient and robust alternative to aerobic exercise in many populations, HIIT might not be a “one size fits all” mode of exercise for a sedentary population. HIIT is typically done in a lab setting and requires the use of specialized equipment which reduces the “real-world” application of HIIT out of the lab setting. Maintaining adherence is key with a sedentary population, and to develop a mode of exercise that requires less time, is less physically taxing, and allows the individual to exercise in the comfort of their own home can help ameliorate the problem of sedentarism in the United States. Compared to 7Min, our data showed that despite similar exercise duration, a single session of cycling-based HIE elicits higher mean and peak VO_2 putting 7-min on the lower end of the intensity spectrum and not representative of HIIE.

My role as a student scholar was both challenging and rewarding. California State University-- of San Marcos provided me with substantial resources to make this research less cumbersome. Resources, that I have observed are not used by most students at this school. In addition to access to resources, my ability to discern what variables to measure was also beneficial in cultivating my research methodology. Methodology, which is ultimately a task that is left up to the students who are willing to navigate various different sources to obtain the necessary information that is needed. I wanted to conduct my research on something that would have a lasting effect on people here at CSUSM, and more importantly on individuals in the science community whom I have never met. I believe that the true purpose of research in my

field is to address modifiable behaviors that can be manipulated to reduce an individuals risk for health disease.