**3743**  
**Board #60**  
**May 30 8:00 AM - 9:30 AM**  
**Energetic System Contribution According Sprint Number In Tabata High Intensity Interval Training Protocol**

Fabio B. Del Vecchio,1 Gabriel V. Protzen,2 Charles Bartel,2 Victor S. Coswig2.1, Federal University of Pelotas, Rio Grande do Sul, Brazil.  
2Federal University of Pará, Castanhal, Brazil.  
3Federal University of Goiás, Goiania, Brazil.

Email: fabriciocobocolo@gmail.com

(No relationships reported)

**PURPOSE:** To analyze the contribution of energetic systems in Tabata’s high intensity-interval training (HIIT) protocol according sprint number

**METHODS:** Sixteen physically active males attended to two experimental sessions. In the first one was performed an incremental test to identify the maximum oxygen uptake (VO2max) and power output (pVO2-max). At the second visit, participants performed HIIT session composed by sprints lasting 20s at 170% of pVO2-max followed by 10s rest until volitional fatigue. For the aerobic system estimative, difference between relative rest VO2 and its values during the activity was used. For the lactic system, the peak of blood lactate ([La−]) after the session was considered. The rapid phase of excess of post-exercise oxygen consumption (EPOC) was used for alactic system contribution. Participants were allocated in three groups, considering the number of sprints performed (G23 = 2 to 3, G45 = 4 to 5 or G67 = 6 to 7 sprints). Relative (% ) energetic contribution were analyzed using two-way ANOVA (group x energetic system).

**RESULTS:** Participants exhibited 24.9±6 years old, 1.67±2.7 cm, 55.6±8.7 kg and a VO2max = 55.6±8.7 mL/kg/min, with [La−] = 13.2±1.7 mmol/L and maximum heart rate = 184±9.3 bpm. For relative energetic contribution (% of aerobic, lactic and alactic respectively), G23 showed 32.3±11.9% (CI95%= 25.5 - 39.2), 24.2±3.9% (CI95%= 17.3 - 31.0) and 43.5±15.4% (CI95%= 36.6 - 50.3); G45 showed 46.3±7.9% (CI95%= 39.4 - 53.1), 22.7±3.9% (CI95%= 15.8 - 29.5) and 31.0±7.2% (CI95%= 24.2 - 37.9), and; G67 showed 60.2±2.3% (CI95%= 51.8 - 68.6); 19.2±2.1% (CI95%= 10.8 - 27.6) and 20.6±3.4% (CI95%= 12.2 - 28.9), with no differences between groups (F=0.0; p=1), differences between systems (F=33.30; p<0.001) and statistical significant interactions (F=11.77; p<0.001).

**CONCLUSIONS:** Performing 2 to 3 sprints was found higher anaerobic contribution and performing 6 to 7 sprints, higher aerobic contribution in Tabata’s protocol. No participants performed eight sprints.

**3744**  
**Board #61**  
**May 30 8:00 AM - 9:30 AM**  
**Effect Of High Intensity Interval Training On Body Composition In Overweight And Obese Sedentary Adults**


(No relationships reported)

Only ~20% of adults adhere to physical activity guidelines. Thus, exercise programs that require less time, such as high intensity interval training (HIIT), need to be investigated. Recent studies suggest HIIT incorporating body weight exercises result in increased exercise capacity (VO2peak) and leg muscle endurance in healthy adults.

**PURPOSE:** It is unclear if HIIT incorporating body weight exercises influences body composition and exercise capacity in overweight/obese, sedentary adults. We hypothesized that HIIT will 1) increase lean mass and decrease body fat and 2) increase VO2peak to a greater extent than moderate intensity continuous training (MICT) in sedentary, overweight/obese adults.

**METHODS:** Eleven participants (10 women) were randomized and have completed all study components (6 HIIT vs. 5 MICT; Age: HIIT 39±7 vs. 32±3 kg/m2) (both, p>0.05). Exercise capacity (VO2peak - cardiopulmonary exercise testing) and body composition (via dual energy X-ray absorptiometry) were measured at baseline and after 12 weeks of training. The HIIT group performed 5 body weight exercises (squats, pushups, lunges, mountain climbers, and plank) 3 days/week for 12 weeks at an intensity equal to a rating of perceive exertion (RPE) ≥17. The MICT group performed 150 min of MICT/week for 12 weeks at a RPE between 12-14.

**RESULTS:** Percent (% ) lean mass increased from baseline following HIIT (p<0.05), but not MICT (HIIT: 54.4±3.3 vs. 55.5±4.0 %; MICT: 52.5±3.9 vs. 51.7±4.3 %). Body fat % significantly decreased from baseline following HIIT (p<0.05), but not MICT (HIIT: 39.9±5.8 vs. 40.7±5.3 %; MICT: 43.9±5.4 vs. 44.7±5.4 %). BMI was not different from baseline following HIIT or MICT (HIIT: 23.2±0.9 vs. MICT: 23.4±0.9 kg/m2). VO2peak significantly increased from baseline following HIIT (p<0.05), but not MICT (HIIT: 23.7±0.9 vs. MICT: 22.8±1.1 mL/kg/min; MICT: 22.8±1.1 vs. 23.1±1.1 mL/kg/min).

**CONCLUSIONS:** These preliminary data support the hypotheses that non-traditional aerobic HIIT (e.g., HIIT incorporating body weight exercises) leads to more advantageous changes in body composition and exercise capacity compared to MICT alone.

**3745**  
**Board #62**  
**May 30 8:00 AM - 9:30 AM**  
**COMPARISON OF MODERATE INTENSITY CONTINUOUS TRAINING VERSUS HIIT ON AEROBIC PERFORMANCE USING STATIONARY AIR BIKE**

Masoud Moghaddam1, Carlos A. Estrada1, Cody L. Diehl1, Brandie C. Cheshier1, Bert H. Jacobson1, 1Oklahoma State University, Stillwater, OK. 2Aurora University, Aurora, IL.

(No relationships reported)

Stationary bikes are known as effective tools to improve physical fitness. Unlike most types of exercise bicycles, a stationary bike has handles that move synchronously with the pedaling action, creating wind resistance via a large fan. Although several studies have been conducted on benefit of exercise bikes, there has been a relative absence of studies using stationary air bikes in order to compare the effects of high intensity interval training (HIIT) and moderate intensity continuous training (MICT) protocols.

**PURPOSE:** The purpose of this study was to compare the effects of stationary air biking, utilizing MICT, ultrashort-HIIT (UH), and short-HIIT (SH) protocols on aerobic performance.

**METHODS:** Thirty-two recreationally active participants were randomly assigned to MICT (n = 11), UH (n = 11), and SH (n = 10) groups. The intervention consisted of 3 day/wk for 4 wks. MICT sessions included 30 min of cycling at 75% of maximal heart rate reserve, while the HIIT protocols (i.e., UH, SH) consisted of 3 sets of 8 intervals at all-out intensity. SH and US protocols were performed with 20s:10s and 10s:5s work-to-rest ratios, and provided with 5- and 2.5-min recovery periods between sets, respectively. Maximal oxygen uptake was assessed via a cycle ergometer using a ramp protocol before and after the intervention. Absolute VO2max (A-VO2max) and time to exhaustion (TTE) were measured and analyzed with 2-way mixed factorial ANOVAs. Additionally, total work (TW) during 12 sessions was recorded and analyzed with one-way ANOVA.

**RESULTS:** There were significant (p < 0.05) differences in TW (MICT: 2263.0 ± 387.0 kcal, UH: 907.3 ± 332.0 kcal, SH: 1230.0 ± 188.1 kcal) between groups. While, all groups significantly improved A-VO2max (MICT: 2663.6 ± 764.6 to 3017.5 ± 834.4 ml/min, UH: 2652.6 ± 502.3 to 3017.5 ± 606.4 ml/min, SH: 2259.3 ± 281.3 to 2531.0 ± 406.8 ml/min), as well as TTE (MICT: 13.3 ± 2.9 to 14.1 ± 4.2 min, UH: 14.0 ± 2.0 to 15.9 ± 2.0 min, SH: 12.3 ± 0.1 ± 13.3 ± 0.1 min).

**CONCLUSION:** Despite the significant group differences in TW, all groups similarly improved aerobic performance (i.e., A-VO2max, TTE) following training. These findings suggest that performing HIIT on a stationary air bike at a 10s:5s work-to-rest ratio can improve aerobic fitness with a shorter time commitment compared to SH and MICT groups.