Influence of a High Fat, Low Carbohydrate Diet on Energy Expenditure and Recovery Time in Cyclists

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Endurance athletes are continuously looking for an edge against their competitors. Performance may be enhanced by dietary manipulation, by lowering heart rate (HR), or rate of perceived exertion (RPE). **PURPOSE:** The purpose of this study was to determine the effects a high fat diet (HFD) has on respiratory exchange ratio (RER), RPE, HR compared to a standard diet (SD) in male triathletes/cyclists. **METHODS:** Subjects were randomized into 2 groups: high fat diet (HFD) and standard diet (SD). The HFD macronutrient breakdown was as follows; 65%/20%/15% respectively for fat/protein/carbohydrate, while the SD comprised of 15%/20%/55%. The study required two visits to William Paterson University's exercise science laboratory. Upon the initial visit, a peak power output (PPO) graded exercise test was conducted. The participant's then followed their 7 day dietary protocol and returned on the 8th day. During this visit, each participant was to cycle for 20 minutes at 50%, 70%, and 80% of their respective PPO. During each 20 minute bout, RER, RPE, and HR were recorded every minute. Average RER (AVGRER) was calculated as the last 5 RER measures during the 20 minute power output test (50, 70 and 80%). **RESULTS:** 6 male trained cyclists have been recruited for this study (mean age: 47±5 years; weight: 80.8±15.4 kg; height: 69.4±7.4 in). As this is preliminary data, to date, only 4 completed the study protocol. No statistical differences were found between the high fat and standard fat diets in RER pre and post-diet, AVGRER at 50% (0.84±0.06 vs. 0.97±0.04, respectively), 70% (0.88±0.06 vs. 0.99, respectively) and 80% (0.96 vs. 1.06, respectively). One subject completed the 70% trial in the SD group, and 1 subject completed the 80% trial in the HFD and SD group, respectively. Of the 4 subjects who have completed the study, there were no differences in recovery time from 50-70% trials (HFD: 509±553 sec vs. SD: 378±236 sec) and 70-80% trials (HFD:641±366 sec vs. SD:667±95 sec). **Conclusion:** While there were no statistical significant differences between groups, AVGRER at the across each intensity level were clearly lower in the HFD group. Lastly, at the 50% PPO protocol, the difference approached .10 (.118). It is possible that with a larger sample size a significant difference will be revealed in RER.

Supported by the WPU Graduate Student Research Program.