

Exercise Intensity Increasing Appetite, Energy, Intake Energy Expenditure, and Fat Oxidation in Sedentary Overweight Individuals

Authors : Ghalia Shamlan, M. Denise Robertson, Adam Collins

Abstract : Appetite control (i.e. control of energy intake) is important for weight maintenance. Exercise contributes to the most variable component of energy expenditure (EE) but its impact is beyond the energy cost of exercise including physiological, behavioural, and appetite effects. Exercise is known to acutely influence effect appetite but evidence as to the independent effect of intensity is lacking. This study investigated the role of exercise intensity on appetite, energy intake (EI), appetite related hormone, fat utilisation and subjective measures of appetite. One hour after a standardised breakfast, 10 sedentary overweight volunteers. Subjects undertook either 8 repeated 60 second bouts of cycling at 95% VO₂max (high intensity) or 30 minutes of continuous cycling, at a fixed cadence, equivalent to 50% of the participant's VO₂max (low intensity) in a randomised crossover design. Glucose, NEFA, glucagon-like peptide-1 (GLP-1) were measured fasted, postprandial, and pre and post-exercise. Satiety was assessed subjectively throughout the study using visual analogue scales (VAS). Ad libitum intake of a pasta meal was measured at the end (3-h post-breakfast). Interestingly, there was not significant difference in EE fat oxidation between HI and LI post-exercise. Also, no significant effect of high intensity (HI) was observed on the ad libitum meal, 24h and 48h EI post-exercise. However the mean 24h EI was 3000 KJ lower following HI than low intensity (LI). Despite, no significant differences in hunger score, glucose, NEFA and GLP-1 between both intensities were observed. However, NEFA and GLP-1 plasma level were higher until 30 min post LI. In conclusion, the similarity of EE and oxidation outcomes could give overweight individuals an option to choose between intensities. However, HI could help to reduce EI. There are mechanisms and consequences of exercise in short and long-term appetite control; however, these mechanisms warrant further explanation. These results support the need for future research in to the role of in regulation energy balance, especially for obese people.

Keywords : appetite, exercise, food intake, energy expenditure

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