NO EFFECT OF A BRISK 45 MINUTE WALK ON THERMIC OR GLYCAEMIC RESPONSES TO LUNCH MEALS

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Exercise may affect the thermic effect of foods (TEF) (Poehlman and Horton 1989) and blood glucose levels (Horton 1991). The aim of this study was to investigate whether a brisk 45 minute walk affects TEF and blood glucose (BG) responses to lunch meals.

The study was conducted on 14 healthy volunteers (7M, 7F, age 34.6 ± 13.8 years, Body Mass Index 24.4 ± 3.9 kg/m^2). Each volunteer was studied on five occasions, the first a 'training' day (results discarded), and two pairs of exercise (E) or no exercise (NE) days, one with a bread based meal and one with a pasta based meal (n=28 E versus NE comparisons, 14 with pasta and 14 with bread). Both meals provided 58 g of carbohydrate and 2400 kJ. Exercise consisted of walking on a treadmill for 45 minutes from 09.45 to 10.30 h at a heart rate of 50-60% of each subject's theoretical maximum. Energy expenditure (EE) was measured from 11.30 to 12.00 h (pre-meal) and 12.30 to 15.30 h (post-meal) using a ventilated hood. Blood glucose was measured using the finger prick method and an Acutrend meter at 12.00 h (pre-meal), 12.30 h (15 mins post-meal) and every 30 minutes until 15.30 h. Subjects standardised their diet and activity for 24 h prior to each study day, and consumed the same meal at 07.30 h on each study morning. All measurements in women were made in the luteal phase of the menstrual cycle. TEF was calculated by subtracting the pre-meal EE from the post-meal average. Glycaemic responses (GR) were calculated for two hours after the meal from the area under the BG curves using the pre-meal BG as the baseline (incremental method, INCR) and the lowest BG as the baseline (absolute method, ABSOL).

The results (mean ± SD, n=28) are shown in the Table. Paired students t-tests showed no differences ($P<0.05$) between E and NE treatments, except for lower post-meal respiratory quotient (RQ) on the exercise day. Exercise versus no exercise differences were similar for the pasta and the bread based meals.

	Pre-meal EE (kJ/24h)	TEF (kJ/3h)	Pre-meal RQ	Post-meal RQ	Rise in RQ	BG (mmol/l) pre-meal	BG (mmol/l) peak	GR (mmol/2h) INCR	GR (mmol/2h) ABSOL
E	6892	141	0.810	0.855	0.046	4.51	6.65	152	188
	±1341	±62	±0.04	±0.03	±0.05	±0.66	±0.98	±90	±81
P	NS	NS	NS	0.01	NS	NS	NS	NS	NS
NE	6763	136	0.825	0.875	0.049	4.40	6.61	161	202
	±1196	±63	±0.04	±0.03	±0.05	±0.63	±0.76	±64	±70

This study provides no evidence that a brisk 45 minute walk taken two hours before a lunch meal affects the thermic or glycaemic response to the meal.

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