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Influence of prior walking on postprandial lipaemia in South Asian and White European women

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Influence of prior walking on postprandial lipaemia in South Asian and White European women. By M.J. Roberts[1,2], A.E. Thackray[1,2], J.A. King[1,2], D. Webb[2,3] and D.J. Stensel[1,2], [1]*National Centre for Sport and Exercise Medicine, School of Sport, Exercise and Health Sciences, Loughborough University, LE11 3TU;* [2]*National Institute for Health Research (NIHR) Leicester Biomedical Research Centre, Leicester, United Kingdom;* [3]*Leicester Diabetes Centre, University Hospitals of Leicester and University of Leicester, United Kingdom.*

South Asians represent the largest ethnic minority in the United Kingdom and have a markedly higher risk of coronary heart disease (CHD) and type 2 diabetes[1]. Previous evidence suggests that South Asian men exhibit impaired postprandial metabolism, but acute bouts of walking and running appear equally, if not more, efficacious for improving postprandial CHD markers in South Asian than white European men[2]. However, it is not known whether similar responses are observed in women.

Twelve healthy South Asian and 12 healthy white European premenopausal women matched for age and body composition (Table 1) completed two, 2-day trials in a counterbalanced, crossover design during the follicular phase of the menstrual cycle. On day 1, participants either rested (control) or completed a treadmill walk for 60 minutes at ~60% maximal oxygen uptake (exercise). On day 2, participants rested and consumed two high-fat meals over a 9-hour period and 13 venous blood samples were collected to determine concentrations of fasting and postprandial triacylglycerol and glucose.

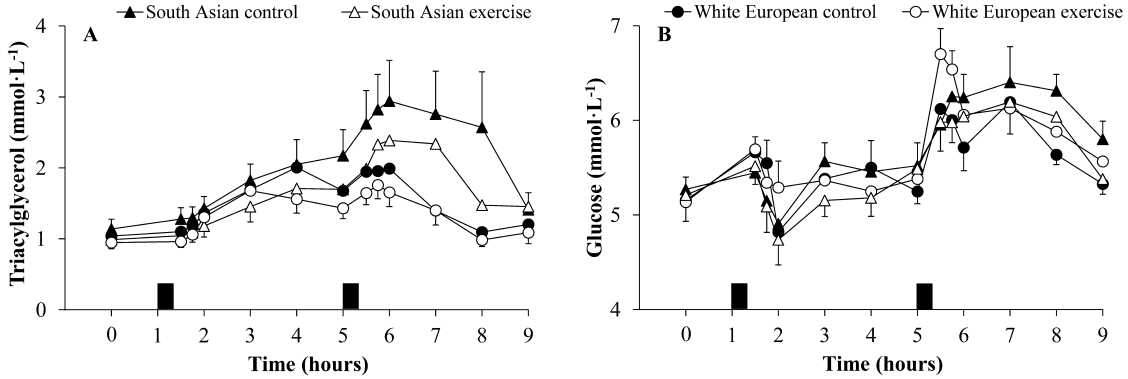
Table 1.

Variable	South Asians (*n* = 12)		White Europeans (*n* = 12)		95% CI WE vs. SA	P Value
	Mean	SD	Mean	SD		
Age (years)	24.2	6.2	24.3	5.3	-5.1 to 4.8	0.945
Body mass index ($kg \cdot m^{-2}$)	23.3	3.8	23.9	4.0	-3.9 to 2.7	0.700
Body fat (%)[1]	31.1	7.3	30.9	5.3	-5.6 to 5.9	0.944
Visceral adipose tissue (L)[2]	1.14	0.93	0.88	0.27	-0.40 to 0.83	0.469
Maximal oxygen uptake ($mL \cdot kg^{-1} \cdot min^{-1}$)	34.8	5.1	40.5	8.5	-11.6 to 0.3	0.060

[1] Determined by bioelectrical impedance; [2] determined by Magnetic Resonance Imaging.

Based on ratios of the geometric means (95% CI for ratios), postprandial triacylglycerol concentrations were 18% higher in South Asian than white European women (-17 to 69%, ES = 0.34, P = 0.336), and 13% lower after exercise than control (-16 to -10%, ES = 0.29, P < 0.001). The exercise-induced reduction in postprandial triacylglycerol concentrations was greater in the South Asian than white European women (19% (ES = 0.40) vs 8% (ES = 0.17), respectively; ethnicity-by-trial interaction P < 0.001). Postprandial glucose concentrations were similar between trials (P = 0.875) and ethnic groups (P = 0.845), but the magnitude of change after exercise was marginally, albeit significantly, different between the South Asian and white European women (-3% (ES = 0.21) vs. 3% (ES = 0.20), respectively; ethnicity-by-trial interaction P = 0.005).

Figure 1. Mean (SEM) postprandial plasma triacylglycerol (panel A) and glucose (panel B) concentrations in the exercise and control trials for South Asian (*n* = 10) and white European (*n* = 9) women. Black rectangles indicate consumption of breakfast and lunch meals.



In conclusion, healthy South Asian women exhibited higher postprandial triacylglycerol concentrations after high fat meals of small-to-moderate magnitude, but acute brisk walking reduced postprandial lipaemia more in South Asian than white European women.

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