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Associations between school-day breakfast consumption, BMI, physical activity and cardiorespiratory fitness in English schoolchildren

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There are positive associations between breakfast consumption and healthy weight in children and adolescents[1]. International data show an association between eating breakfast and physical activity (PA) in schoolchildren[2]. While weight status and PA are important health markers, it is emerging that schoolchildren's cardiorespiratory fitness (CRF) also plays an important role in determining adult health.[3] The relationship between breakfast consumption and PA has not been studied in English schoolchildren. No data have described the relationship between children's CRF and breakfast consumption. The aim of the present study was to investigate the relationship between habitual breakfast consumption, weight classification, PA and CRF in English schoolchildren.

A stratified sample of 4337 9–16 year olds from eleven schools was assessed. After obtaining ethical approval and parental consent, each participant was assessed for: mass, stature, self-reported PA (physical activity questionnaire for children and adolescents[4]; PAQ) and CRF (20 m shuttle run). BMI was classified using International Obesity Task Force criteria[5]. PA was classed as inactive (<2.5) or active (≥2.5) based on PAQ score[4]. CRF was classed as low or high using 'fitnessgram' cut-offs[6]. School-day breakfast frequency was assessed by self report and classified as: never, sometimes or always. Multinomial logistic regression was performed, using participants who always ate breakfast as the reference category.

Participants reported breakfast frequency as: always, 68 %; sometimes, 25 %; never, 7 %. Compared with the 'always' group males who sometimes ate breakfast were more likely to be obese (OR 1.9 95 % CI (1.3, 2.8)) and inactive (OR 1.3 (95 % CI 1.1, 1.6)). Males who never ate breakfast were more than twice as likely to be classified as inactive (OR 2.4 (95 % CI 1.6, 3.5)) and unfit (OR 2.1 (95 % CI 1.4, 3.0)). Females were more likely to be classified as inactive if they sometimes (OR 1.3 (95 % CI 1.1, 1.6)) or never (OR 1.7 (95 % CI 1.3, 2.7)) ate breakfast. Females were also more likely to be unfit if they sometimes (OR 1.4 (95 % CI 1.1, 1.9)) or never (OR 1.7 (95 % CI 1.2, 2.3)) ate breakfast.

These English data concur with international studies showing a positive association between breakfast frequency and PA in schoolchildren of both genders. PA is important but CRF may offer a more objective health measure. These data are the first to demonstrate a relationship between breakfast frequency and CRF in schoolchildren and show that children who do not eat breakfast on school days are more likely to be unfit. Further studies more able to delineate acute and chronic effects of breakfast consumption on CRF test performance are warranted.

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