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Physical activity and obesity prevention: a review of the current evidence

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Table 1

During publication errors were inadvertently introduced into Table 1 of the paper. The correct version is overleaf.

Table 1. Self-reported physical activity (PA) and weight gain in adults (> 18 years)

Study	<i>n</i>	Baseline age, gender	Selection	Method	PA assessment	Outcome	Size of effect	Confounding
Petersen <i>et al.</i> (2004)	6279	20–78 years, male and female	Random sample (excluding BMI >30 kg/m ² at 2nd survey), Denmark	Longitudinal, 10 years follow-up	Self-report, four categories	ΔBMI	No effect of LTPA on the development of obesity. Compared with median BMI, OR of later inactivity among women with high BMI was 1.91 (95% CI 1.39, 2.61) and 1.50 (95% CI 1.01, 2.22) among men. However, LTPA not related to later obesity but obesity may lead to inactivity	Gender, age, BMI, smoking, education, predisposition to obesity, work PA, pre-existing diseases
Wenche <i>et al.</i> (2004)	9357	20–49 years, female	Apparently-healthy, normal BMI 18.5–24.9 kg/m ² (excluding angina, diabetes, stroke, MI and long-term illness), Norway	Prospective, 11 years follow-up	Self-report, LTPA categorised into high, medium and low	ΔBMI	Those with a high level of PA gained 0.18 (95% CI 0.05, 0.32) kg/m ² less than those with low PA at baseline	BMI, age and education at baseline
Droyvold <i>et al.</i> (2004)	6749	20–69 years, male	Apparently-healthy, normal BMI 18.5–24.9 kg/m ² (excluding angina, diabetes, stroke, MI and long-term illness), Norway	Prospective, 11 years follow-up	Self-report, LTPA categorised into high, medium and low	ΔBMI	Those who were physically active at baseline gained 0.12 (95% CI 0.04, 0.2) kg/m ² less than those who were inactive	BMI, age and education at baseline
Hu <i>et al.</i> (2003)	50277	46–71 years, female	Healthy, BMI <30 kg/m ² in previous 16 years (excluding cancer, CVD and diabetes), USA	Prospective cohort, 6 years follow-up (Nurse's Health Study)	Self-report of PA and sedentary behaviour	Onset of obesity (BMI >30 kg/m ²)	2 h/d increase in TV viewing associated with a 23 (95% CI 17, 30) % increase in obesity; each 2 h/d increase in sitting at work associated with a 5 (95% CI 0, 10) % increase in obesity; standing or walking around at home (2 h/d) associated with a 9 (95% CI 6, 12) % reduction in obesity; 1 h brisk walking/d associated with a 24 (95% CI 19, 29) % reduction in obesity	Age, smoking, alcohol consumption, EI, total fat, glycaemic load, cereal fibre
Koh-Banerjee <i>et al.</i> (2003)	16587	40–75 years, male	Healthy (excluding CVD, cancer, diabetes), USA	Longitudinal, 9 years follow-up (Health professionals' study)	Self-report, leisure time, last year (biennially)	ΔWC	Increase in vigorous PA (by 25 MET-h/week; approx 4 h vigorous activity) associated with a reduction in waist of 1.9 (95% CI –3.5, –0.3) mm. Increase in TV viewing by 20 h/week associated with an increase in waist of 3.0 (95% CI 0.6, 5.4) mm	Age, BMI, WC, total energy, alcohol consumption, total PA and change in smoking and in BMI

Macdonald <i>et al.</i> (2003)	898	45–54 years, female	Random sample from an osteoporosis screening programme, around menopause, no HRT, UK	Prospective 6–3 years follow-up	Self-report time in rest, light, moderate and vigorous intensity, PAL calculated	Δ BW	Change in PAL influenced change in BW explaining 4.4%. Over time, PAL decreased with increasing wt gain ($P < 0.001$)	Age, wt and height, EI or EI difference, smoking
Ball <i>et al.</i> (2002)	8726	18–23 years, female	Apparently-healthy (excluding pregnancy, serious medical condition), Australia	Prospective, 4 years follow-up	Self-report, two items (periods of moderate + vigorous ≥ 20 min at a time per week). Time spent sitting	BMI maintainers (Δ BMI < 5%) or gainers (Δ BMI $\geq 5\%$)	No association between PA and wt maintenance status	Socio-demographics (education, marital status, occupation, parity, new mothers)
Bell <i>et al.</i> (2001)	2487	20–45 years, male and female	Healthy (excluding pregnancy, BMI < 12 kg/m ² or > 60 kg/m ² , wt change > 20 kg/m ²), China	Prospective, 8 years follow-up	Interview, work-related PA	Δ BW	Males and females who gained > 5 kg over 8 years were 3.1 (95% CI 1.7, 5.6) and 1.8 (95% CI 1.1, 3.1) times more likely to engage in light rather than heavy work-related PA	Wt, wt status, height, age, residence, income and education
Wagner <i>et al.</i> (2001)	8865	50–59 years, male	Healthy (excluding history of CHD, cancer or died during follow-up), France and Northern Ireland	Prospective, 5 years follow-up	Self-report last year PA at work, transportation to work and leisure time	Δ BMI	Regular walking or cycling to work inversely related to BMI change (β – 0.006; 95% CI – 0.011, 0.000). Subjects who performed high-intensity leisure time activity gained less in BMI than those who did not (β 0.10 (95% CI: 0.03, 0.17) kg/m ²)	Centre, age, marital status, education, work, socio-occupational class, dieting, alcohol, smoking, work PA
Rainwater <i>et al.</i> (2000)	539	Mean age 37 years, male and female	Healthy Mexican-Americans (excluding anti-lipids and anti-hypertensive drugs, and diabetes), USA	Prospective, 5 years follow-up	Interview, Stanford 7 d recall	Δ BW	Δ PA not correlated with Δ BW	Age and gender
Sherwood <i>et al.</i> (2000)	1044	20–45 years, male and female (79%)	Community volunteers participating in a community wt-gain-prevention project, USA	Longitudinal, annual measurements for 3 years	PA history, thirteen items, leisure and occupational activity ≥ 20 min at a time; four categories; intensity and frequency in each category used	Δ BW	Men: increase in one high-intensity exercise session per week associated with decrease in wt of 0.53 (95% CI 0.33, 0.74) kg Women: increase in one high-intensity exercise session per week associated with decrease in wt of 0.15 (95% CI 0.04, 0.25) kg. Increase in one moderate-intensity exercise session per week associated with decrease in wt of 0.11 (95% CI 0.05, 0.16) kg and an increase in one vigorous activity session per week associated with a decrease of 0.21 (95% CI 0.06, 0.36) kg	Age, smoking status, education, income and marital status

Table 1 (Continued)

Study	<i>n</i>	Baseline age,gender	Selection	Method	PA assessment	Outcome	Size of effect	Confounding
Schmitz <i>et al.</i> (2000)	2770	18–30 years, male and female	Healthy (excluding pregnant; CARDIA study), USA	Longitudinal, five assessments over a 10-year period	Interview-based self-report; frequency and participation in thirteen sport and exercises, no assessment of duration, Outcome exercise units (CARDIA PA history)	ΔBW	An increase in 200 'exercise units' (equal to regular exercise at 6 MET 2 h/week for 11 months) expected to decrease BW by 0.38–1.12 kg/year	Age, education, alcohol intake, parity, smoking, % total EI from dietary fat at baseline and year 7

OR, odds ratio; PAL, PA level; LTPA, leisure-time PA; BW, body weight; Δ, mean change; MI, myocardial infarction; HRT, hormone-replacement therapy; WC, waist circumference; EI, energy intake; MET, metabolic equivalent task; CARDIA, Coronary Artery Risk Development in Young Adults; TV, television.