

## Obesity

### JOURNAL OF APPLIED PHYSIOLOGY

#### Exercise without weight loss reduces body fat

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

**1** Twenty-four men participated in this 13-week study, which included supervised aerobic exercise for 60 minutes, five times per week, at moderate intensity (at approximately 60% peak oxygen uptake) in order to observe whether exercise without weight loss is effective in reducing body fat.

**2** The participants, all middle-aged, fell into one of three groups: eight were lean (body mass index [BMI] of <25 kg/m<sup>2</sup> with a waist circumference [WC] of <94 cm); eight were obese without type 2 diabetes; and eight were obese with type 2 diabetes – both obese groups were defined as having a BMI of >27 kg/m<sup>2</sup> with a WC of >100 cm. All participants' weights were stable for 6 months prior to the start of the study.

**3** No significant body weight changes were observed within or across any of the groups ( $P>0.1$ ).

**4** Total, abdominal subcutaneous and visceral fat were significantly reduced in all groups ( $P<0.01$ ).

**5** Total and abdominal subcutaneous fat reduction was not significantly different between the groups ( $P>0.1$ ).

**6** The reduction in visceral fat was greater in the two obese groups compared with the lean group ( $P<0.01$ ).

**7** In all groups total skeletal musculature was increased ( $P<0.01$ ).

**8** The authors conclude that regular exercise is associated with substantial reductions in total and visceral fat, and skeletal muscle lipid in obese people with and without type 2 diabetes.

Lee S, Kuk JL, Davidson LE et al (2005) Exercise without weight loss is an effective strategy for obesity reduction in obese individuals with and without type 2 diabetes. *Journal of Applied Physiology (Bethesda)* **99**(3): 1220–5

#### Regular walking or light jogging for 60 minutes effectively reduces body fat in people with type 2 diabetes



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**W**hile it is well known that physical activity has an important beneficial effect on glycaemic control in people with type 2 diabetes (Boule et al, 2001), exercise remains a very under-exploited treatment strategy for the majority of people with type 2 diabetes in this country. The reasons for this are complex and cultural, but include continuing uncertainty about the optimum type and duration of exercise, the perceived frequent need for supervision, difficulty for some patients in being able to exercise, and a common misconception among professionals that a lack of weight loss suggests either little benefit or that the patient is not actually taking the recommended exercise!

Lee and colleagues, in the *Journal of Applied Physiology* (summarised on the left), report important new information on these issues. They studied obese middle-aged men with and

without type 2 diabetes, using a combination of magnetic resonance imaging and computed tomography, and were able to make the important observation that 60 minutes of supervised walking or light jogging on a treadmill, five times per week for 13 weeks, had a markedly beneficial effect of reducing the visceral fat content of the abdomen and increasing muscle size, so that the ratio of body muscle to fat was significantly increased. Although not evaluated in this particular study, it is already known that reduced visceral and muscle fat improve insulin sensitivity. The work by Lee and colleagues demonstrates that regular light exercise, of an intensity and duration that would be achievable by most people with diabetes, has an important beneficial effect on body fat reduction, and should be encouraged – even if overall body weight remains unchanged.

Boule NG, Haddad E, Kenny GP, Wells GA, Sigal RJ (2001) Effects of exercise on glycemic control and body mass in type 2 diabetes mellitus: a meta-analysis of controlled clinical trials. *Journal of the American Medical Association* **286**(10): 1218–27

### NEW ENGLAND JOURNAL OF MEDICINE

#### Rimonabant improves several metabolic risk factors

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓

**1** The Rimonabant in Obesity-Lipids (RIO-LIPIDS) study randomised 1036 overweight or obese participants with untreated dyslipidaemia to double-blinded therapy with placebo or 5 mg or 20 mg rimonabant, a selective cannabinoid-1 (CB-1) receptor blocker, for 12 months in addition to a hypocaloric diet.

**2** Compared with those in the placebo group, participants on 20 mg

rimonabant demonstrated significant mean weight loss, a reduction in waist circumference, a reduction in triglyceride levels and an increase in high-density lipoprotein-cholesterol. Rimonabant at 20 mg also resulted in an increase in plasma adiponectin levels, which was partly independent of weight loss alone.

**3** Depression, anxiety and nausea were the most frequent detrimental events associated with the discontinuation of the drug.

**4** The authors conclude that, although pharmacological therapies alone will not eradicate the obesity epidemic, selectively blocking the CB-1 receptor with rimonabant produces a significant reduction in weight and waist circumference and improves the metabolic profile in high-risk people who are overweight or obese.

Despres JP, Golay A, Sjostrom L; Rimonabant in Obesity-Lipids Study Group (2005) Effects of rimonabant on metabolic risk factors in overweight patients with dyslipidemia. *New England Journal of Medicine* **353**(20): 2121–34

**‘In morbidly obese people weight loss through laparoscopic adjustable gastric banding can prevent type 2 diabetes and hypertension for at least 4 years.’**

**‘The safety of recommending limited weight gain during pregnancy needs to be studied further by means of prospective studies.’**

## DIABETES CARE

### Maternal weight gain in pregnancy is linked to birth weight and risks

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓✓

**1** A historical cohort study was performed to examine the effects of gestational weight gain in obese glucose-tolerant women and its relation to maternal and infant outcomes.

**2** All 481 women studied had a prepregnancy body mass index (BMI) of >30kg/m<sup>2</sup> and normal 2-hour 75g oral glucose tolerance test (OGTT) during the third trimester (according to World Health Organization criteria).

**3** Four groups were defined according to weight gain during pregnancy: group 1, <5.0kg; group 2, 5.0–9.9kg; group 3, 10.0–14.9kg; group 4, ≥15.0kg.

**4** With increasing weight gain, birth weight significantly increased (mean grams±standard deviation): group 1, 3456±620; group 2, 3624±675; group 3, 3757±582; group 4, 3784±597 (*P*<0.001 for all four groups). The birth weight for group 1 was similar to that of the background population of primarily normal-weight women, 3478g.

**5** Multivariate analysis demonstrated that an increase in weight was associated with significantly higher rates of hypertension, Caesarean sections, induction of labour, and large-for-gestational-age infants. No significant difference was observed in the rates of small-for-gestational-age infants. Significant predictors for birth weight were weight gain, 2-hour OGTT result, pregestational BMI, maternal age, gestational age and smoking status.

**6** The safety of recommending limited weight gain during pregnancy needs to be studied further by means of prospective studies, the authors conclude.

Jensen DM, Ovesen P, Beck-Nielsen H, et al (2005) Gestational weight gain and pregnancy outcomes in 481 obese glucose-tolerant women. *Diabetes Care* **28**(9): 2118–22

## DIABETES CARE

### Type 2 diabetes and hypertension prevented by gastric banding

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

**1** The aim of this study was to compare laparoscopic adjustable gastric banding (LAGB) and conventional diet (no-LAGB) in the prevention (primary intervention study) and remission (secondary intervention study) of type 2 diabetes and hypertension.

**2** Of those who underwent a diagnostic work-up, 73 people had the surgery (LAGB) and 43, who

declined surgery, agreed to be followed up (average age and body mass index [BMI] of all participants were 48.5 years and 45.7kg/m<sup>2</sup>, respectively). All participants were followed up for 4 years.

**3** BMI decreased significantly in the LAGB group and stayed constant in the no-LAGB group. In the primary intervention study, five of the no-LAGB and none of the LAGB group progressed onto type 2 diabetes. In the secondary intervention study, type 2 diabetes remitted in one of the no-LAGB group and seven of the LAGB group.

**4** The authors conclude that, in morbidly obese people, weight loss through LAGB can prevent type 2 diabetes and hypertension for at least 4 years.

Pontiroli AE, Folli F, Paganelli M et al (2005) Laparoscopic gastric banding prevents type 2 diabetes and arterial hypertension and induces their remission in morbid obesity. *Diabetes Care* **28**(11): 2703–9

## CLINICAL DIABETES

### Sugar-sweetened drinks increase risk of type 2 diabetes

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

**1** This review describes a study in which a total of 91 249 women, from the US-based Nurses' Health Study II, were included for the diabetes analysis, of whom 51 603 were included for the weight gain analysis. All data on weight

and morbidity were collected over 8 years by mailed questionnaires. Data on sugar-sweetened and un-sweetened beverage intake were also collected.

**2** Consumption of sugar-sweetened drinks was associated with weight gain and an increase in the incidence of diabetes.

**3** The authors conclude that, based on the study results, consumers of such beverages should be encouraged to minimise their intake in order to reduce the risk of developing diabetes.

Welsh J, Dietz W (2005) Sugar-sweetened beverage consumption is associated with weight gain and incidence of type 2 diabetes. *Clinical Diabetes* **23**(4): 150–2

## DIABETES CARE

### Smoking may be an independent risk factor for diabetes

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

**1** Smoking is an established risk factor for cardiovascular disease, but not for diabetes. This study's aim was to determine whether smoking is linked to the development of diabetes.

**2** Nine-hundred and six participants were categorised into three groups:

never, former and current smokers. Ninety-six of the current smokers developed diabetes at 5 years compared with 60 of the never smokers. An increase in body mass index was significantly associated with smoking status and the increase in the incidence of diabetes.

**3** The current US Surgeon General's warnings against smoking are justified as this study clearly demonstrates a significant link between smoking and diabetes.

Foy CG, Bell RA, Farmer DF et al (2005) Smoking and incidence of diabetes among U.S. adults: findings from the Insulin Resistance Atherosclerosis Study. *Diabetes Care* **28**(10): 2501–7