

10% WEIGHT LOSS IN PRE-DIABETES

Average 10% weight loss in 4 out of 5 people with pre-diabetes¹



**EVIDENCE
BASED**

- Cambridge Weight Plan is an evidence-based weight loss and maintenance programme with sustained health benefits
- Flexible energy intake and flexible combinations of formula and regular food
- Formula diets for primary and secondary care and community settings
- Average 15% weight loss² and 10% maintenance (1 year evidence) in obstructive sleep apnoea with sleep benefit³
- In secondary heart disease prevention average 10% weight loss⁴ and 7% weight maintenance⁵ (1 year evidence with aerobic interval training) and
 - Increased insulin sensitivity⁶
 - Less atherogenic blood lipids⁷
 - Small lean mass losses⁵
 - Improved cardiovascular fitness⁵
- Predictable weight loss before bariatric surgery⁸
- Average 10% weight loss⁹ and maintenance¹⁰ (4 year evidence) in osteoarthritis with maintained symptom benefit¹¹ and improved vitamin D status and maintained bone health¹²
- Weight loss and maintenance (1 year evidence) in psoriasis with maintained skin improvement^{13,14}
- Reduced 'pro-inflammatory' and 'pro-insulin resistance' protein panels with weight loss, and one year maintenance of both reduced weight¹⁵ and improved proteomics markers¹⁶

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WEIGHT-LOSS AND SECONDARY PREVENTION OF CORONARY HEART DISEASE

In eight centres across Europe that contributed data to the European Action on Secondary Prevention through Intervention to Reduce cardiac Events survey (EUROASPIRE III), the prevalence of obesity rose from 25 to 38% in the ten years prior to 2007. In addition, data from 22 countries across Europe was used to assess the overweight and obesity among patients participating in secondary prevention of heart disease programmes. Only 18% of patients were found to achieve a reduction of body weight to below a BMI of 25 kg/m². Survey results suggested that a proportion of patients were largely unaware that they had a weight problem, and only half of those with BMI over 30 reported actively trying to lose weight in the month preceding questioning. The survey also showed a more frequent use of lipid-lowering and anti-hypertensive drugs in overweight and obese patients. The authors concluded that 'management of body weight should be given the highest priority in patients with coronary artery disease'.

To investigate the potential benefit of weight loss with a formula diet programme, 70 non-diabetic people with coronary artery disease aged 45 to 75 years and with BMI >28 kg/m², were randomised to aerobic interval training (AIT) at 90% peak heart rate three times weekly or a low-energy liquid diet (LED) Cambridge Weight Plan 800–1000kcal/d for eight to 10 weeks, followed by two to four weeks' weight maintenance diet with conventional food reintroduction (Pedersen et al 2013; Pedersen et al 2015A). Insulin sensitivity and glucose metabolism were assessed by 3h glucose tolerance tests with calculation of insulin sensitivity (Pedersen et al 2015B). Coronary microvascular function was measured before and after the intervention by measurement of coronary flow reserve (CFR) (Olsen et al 2015).

Three out of four successfully completed the AIT (n=26) and four out of five (n=29) successfully completed the LED. The LED group lost 10.6% of their initial body weight and 26.6% of their fat mass, whereas in the AIT group weight loss was 1.6% and fat mass loss was 5.5% (p<0.001 between groups for both variables). Systolic blood pressure was reduced significantly after AIT but not after LED and diastolic blood pressure did not change significantly. VO₂ peak total (mL/min) increased significantly after AIT by 212 from 1999, but not after LED, there being a significant difference between the groups (Pedersen et al 2015A).

Fasting plasma glucose and fasting plasma insulin were significantly reduced after LED but not after AIT. Whole body and hepatic insulin sensitivity increased significantly after the LED but not after AIT, as did the beta-cell response (Pedersen 2015B).

A significant reduction of small dense low density (LDL) lipoprotein occurred after LED only, indicating decreased lipoprotein atherogenicity (Pedersen et al 2016).

Baseline CFRs indicated poor coronary microvascular function, which increased significantly after both interventions by 0.26 from 2.27 after AIT and by 0.39 from 2.29 after LED, but there was no significant difference between the groups (Olsen et al 2015).

Following the initial 10 to 14 weeks' intervention, both groups continued supervised AIT twice weekly for 40 weeks and the LED group also continued a dietitian-supervised weight maintenance programme. The AIT followed by twice weekly AIT group maintained 1.6kg weight loss at one year, while the LED followed by weight maintenance plus twice weekly AIT group maintained 7.2kg weight loss of which 0.5kg was determined as lean mass loss. VO₂ peak BW ML/min/kg was significantly improved at one year after LED followed by twice weekly AIT (23.7 compared to 20.5 at baseline) whereas after AIT VO₂ peak BW was improved but not significantly (22.5 compared to 21.0 at baseline) (Jurs et al 2015). Publication of the one year CFR results is awaited.

These findings suggest that achieving an initial body weight loss of 10% followed by a weight maintenance programme with aerobic interval training is associated with increased insulin sensitivity, a less atherogenic blood lipid profile, a relatively small loss of lean mass, and improved cardiovascular fitness, and thus may contribute effectively to secondary prevention of coronary heart disease.

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