

# Weight-loss diets may reverse atherosclerosis in obese, overweight people

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A low-carbohydrate diet, a low-fat diet and the Mediterranean diet were equally effective in helping obese people to reverse carotid atherosclerosis after losing moderate amounts of weight and improving their blood pressure, in a study reported in *Circulation: Journal of the American Heart Association*.

Researchers at Ben-Gurion University of the Negev, the Nuclear Research Center and Soroka Hospital in Israel investigated whether diet could reverse atherosclerosis, a slow, progressive condition in which the arteries thicken with plaque buildup, increasing risk of heart attacks and strokes. The research team compared the three diets among overweight participants, mostly men, who were at high risk for atherosclerosis.

After two years, researchers noted a significant 5 percent regression in average carotid vessel-wall volume and 1.1 percent decrease in carotid artery thickness.

Compared to participants who had increased carotid wall volume, those with decreases had other improvements:

- greater weight loss (11.7 pounds versus 7 pounds);
- decreased systolic [blood pressure](#) levels (6.8 mmHg versus 1.1 mmHg);

- improved homocysteine levels; and
- an increase in apolipoprotein A1 (Apo A1), the major component of "good" cholesterol.

The researchers said, beyond drug treatment, the data is some of the earliest showing the potential of diet as a [lifestyle modification](#) strategy to prevent atherosclerosis. The findings indicate that sustained, moderate weight loss — not the macronutrient content of the different diets — leads to improved cardiovascular health.

"Long-term adherence to weight-loss diets is effective for reversing carotid atherosclerosis as long as we stick to one of the current options of healthy diet strategy," said Iris Shai, R.D., Ph.D., study lead author and a nutrition epidemiologist at Ben-Gurion University of the Negev in Beer-Sheva, Israel. "This effect is more pronounced among mildly obese persons who lose more than 5.5 kilograms (12.1 lbs) of body weight and whose systolic blood pressure decreases by more than 7 mmHg. An increase in ApoA1 (HDL cholesterol apolipoprotein) and a decrease in total homocysteine blood levels are further associated with subsequent success in reversing carotid atherosclerosis."

Researchers studied 140 people (88 percent men, average age 51, average body mass index 30.4 kg/m<sup>2</sup>) from the Nuclear Research Center Negev who were randomly assigned to a low-carbohydrate, low-fat or [Mediterranean diet](#) as part of the Dietary Intervention Randomized Controlled Trial-Carotid (DIRECT-Carotid) study. Twenty-six percent of participants used lipid-lowering therapies, including 20 percent on statins, and nearly one-third of the group took blood pressure medication. They continued with their prescribed treatments throughout the study. Blood pressure was measured every three months, and blood samples to measure biomarkers such as homocysteine levels were collected after a 12-hour fast, at baseline, at six months and again at 24

months. Researchers used ultrasound to capture three-dimensional images of the carotid artery wall and to measure changes in arterial thickness at baseline and at the two-year follow-up.

Participants maintained food diaries and responded to diet questionnaires periodically throughout the study. While caloric deficits were similar among the three groups, intake of carbohydrates, fiber, dietary cholesterol and monounsaturated and saturated fats varied, depending on the type of diet. However, these variations in nutrient intake did not produce significant differences in the outcomes.

"The reduced caloric intake is probably the major determinant of weight loss, but the macronutrient content determines patients' satisfaction with the diet and the metabolic changes associated with the [weight loss](#)," said Yaakov Henkin, M.D., study co-author and a cardiologist at Soroka University Medical Center, Israel. "The importance of these results is in the understanding that over two years, changes in carotid atherosclerosis are more strongly predicted by diet-induced changes in blood pressure."

The study's findings are promising and could be applicable to other populations. But since few women were in the study, gender-specific effects remain unknown, researchers said.

American Heart Association diet and lifestyle recommendations underscore the importance of balancing calories with physical activity to achieve and maintain a healthy body weight and acknowledge that macronutrient content of the diet has little effect on energy balance with the exception of influencing diet satisfaction.

Provided by American Heart Association

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