

Sodium, Sugar Intake Predicted Vascular Function

BY DOUG BRUNK

FROM THE ANNUAL MEETING OF
THE OBESITY SOCIETY

SAN DIEGO – Low adherence to the Dietary Approaches to Stop Hypertension diet, including increased intake of dietary sodium and sweetened beverages, predicted vascular dysfunction and insulin resistance among a cohort of healthy black women, regardless of body weight.



Black women should eat more fruits and vegetables, nuts, legumes, and low-fat dairy products.

DR. PEMU

Although the reason for the association remains unclear, genetic susceptibility and lifestyle factors may play a role, Dr. Priscilla E. Pemu said in an interview during a poster session at the meeting. Endorsed by the National Institutes of Health, the principles of the

DASH diet are based on a low-sodium eating plan rich in fruits and vegetables, along with low-fat or nonfat dairy products (www.dashdiet.org).

“One of the main components of the DASH diet is intake of low-fat dairy products,” said Dr. Pemu, an internist at Morehouse School of Medicine, Atlanta. In the black population, “there tends to be avoidance of dairy products because of lactose intolerance. Offering people alternatives – things they can tolerate – would be important in this population.”

Dr. Pemu and her associates enrolled 52 healthy, normotensive, lean and obese black women (aged 18-45 years) in an effort to determine the contribution of dietary factors to vascular dysfunction.

The women completed the Willett Food Frequency Questionnaire, and blood was collected for measurement of endothelial progenitor cells, C-reactive protein, adiponectin, tumor necrosis factor- α , and insulin resistance by homeostasis model assessment (HOMA), in which a level of 2.2 or greater was de-

Major Finding: Compared with a reference population from the Nurses’ Health Study, healthy black women with low adherence to a DASH-type diet had worse nitroglycerine-dependent dilatation and more insulin resistance, regardless of body weight.

Data Source: A study of 52 healthy black women aged 18-45 years.

Disclosures: The study was supported by grants from the National Center for Research Resources. Dr. Pemu said she had no relevant financial conflicts.

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finied as insulin resistance.

The researchers also used high-frequency ultrasound to measure flow-mediated dilatation and nitroglycerine-dependent dilatation.

Study participants had less adherence to a DASH-type diet, compared with a reference population from the Nurses’ Health Study (Arch. Intern. Med. 2008;168:713-20), as evidenced by lower mean dietary intake of fruits per day (1.27 vs. 1.4, respectively), as well as a significantly higher mean daily intake of sodium (2,360 mg vs. 2,070 mg) and number of daily servings of sweetened beverages (2.33 vs. 0.26).

Lower DASH adherence scores among the study participants were associated with worse nitroglycerine-dependent dilatation, a correlation that was unaffected by age, blood pressure, or body mass index, Dr. Pemu reported.

Low DASH adherence scores, including higher intake of sodium and sugar-sweetened beverages, also predicted insulin resistance as measured by HOMA.

Based on these findings, Dr. Pemu recommended that black women “increase the amount of fruits and vegetables that they consume, as well as nuts, legumes, and low-fat dairy products, because we are starting to see a relationship with vascular dysfunction even in the absence of cardiovascular disease.”

Dr. Pemu, who is also director of clinical trials at the clinical research center at Morehouse, acknowledged certain limitations of the study, including its small sample size and the potential for error in the self-reported food frequency questionnaires. “However, our data compared favorably with a much larger data set in the Nurses’ Health Study, giving us confidence in the relationships we have identified.” ■

Aerobic Interval Training May Yield Long-Term Benefits

BY BRUCE JANCIN

FROM THE ANNUAL CONGRESS OF
THE EUROPEAN SOCIETY OF CARDIOLOGY

STOCKHOLM – A cardiac rehabilitation program built around supervised high-intensity treadmill aerobic interval workouts improves peak oxygen uptake to a greater degree than does standard moderate-intensity cardiac rehab, according to a randomized trial.

Moreover, the advantage favoring aerobic interval training remained significant at follow-up 30 months after patients completed their formal 12-week cardiac rehab program, Dr. Trine T. Moholdt reported at the congress.

“One of the biggest challenges in cardiac rehabilitation is how to make patients continue with a healthier lifestyle after ending the rehab program. There are no long-term effects of exercise training; that is, you have to keep on doing it to get the benefit from it,” observed Dr. Moholdt of the Norwegian University of Science and Technology, Trondheim.

The group assigned to the aerobic interval cardiac rehab program reported exercising more regularly and at considerably higher intensity than did the standard rehab group during the 30 months after their structured program ended. That’s the likely explanation for why their peak oxygen uptake (VO₂max) at 30 months remained significantly higher than in the control group, although VO₂max declined over time in both groups, she said.

Her study comprised 107 MI patients undergoing 12 weeks of cardiac rehab at three Norwegian hospitals. They were randomized to aerobic interval training or conventional cardiac rehab entailing two physical therapist-led group sessions per week, each lasting about 60 minutes and performed at 70%-80% of an individual’s maximum heart rate.

The aerobic interval regimen consisted of a 10-

minute warm-up followed by 40 minutes of uphill treadmill walking or jogging intervals. The workout consisted of four 4-minute-long high-intensity intervals at 85%-95% of a patient’s individually determined maximum heart rate, followed by a 3-minute recovery, then a cool down. The high-intensity intervals were designed to be just challenging enough so that patients could say only a few words while doing them but would not experience pain in the chest or legs.

Subjects in both study arms were encouraged to do one additional workout per week at home.

Eighteen patients dropped out of the 12-week cardiac rehab program. Among completers, the aerobic interval group showed a mean improvement in VO₂max from 31.6 mL/kg per minute at baseline to 36.2 at 12 weeks. This was a significantly greater gain than that seen in the moderate-intensity rehab group, which improved from 32.2 to 34.7 mL/kg per minute.

Follow-up assessments were conducted at 6 and 30 months after completion of the rehab program. VO₂max declined over time in both groups. By 30 months VO₂max in the aerobic interval training group was back to baseline; however, VO₂max in the standard cardiac rehab group had declined to significantly below baseline. Thus, the aerobic interval training group retained a significant relative advantage, although it seems clear that some sort of refresher intervention needs to be developed.

In terms of secondary study end points, flow-mediated dilatation of the brachial artery increased significantly in both groups after the rehab program, with no between-group difference. So did quality of life scores and increases in plasma adiponectin, a hormone with multiple beneficial metabolic effects. Only the aerobic interval program graduates experienced a significant increase in HDL levels, which rose from 49.9

mg/dL at baseline to 51.5 mg/dL after 12 weeks.

In the 69 subjects who presented at 30 months post rehab, self-reported physical activity varied markedly between the two study groups. Fully 20% of the standard-rehab patients reported being physically inactive, compared with 4% in the aerobic interval group. Fifteen percent in the standard-rehab group indicated they engaged in high-intensity exercise, compared with 46% of graduates of the aerobic interval-based program – and therein lies the explanation for the significant long-term difference between the two groups in VO₂max, according to Dr. Moholdt.

She noted that these results are consistent with an earlier randomized study she and her coworkers conducted in coronary artery bypass graft surgery patients followed for 6 months after completing cardiac rehab emphasizing either aerobic interval training or continuous moderate exercise (Am. Heart J. 2009;158:1031-7).

Attendees at the session devoted to research in cardiac rehab were generally enthusiastic about the Trondheim study findings and found the data convincing. One attendee said that the aerobic interval training program was as much a psychological as a physiological intervention.

“You’ve proved that a different self-reported behavior pattern was created. You’ve shown the patients that they could dare to perform high-level exercise,” he said.

“I do agree,” Dr. Moholdt replied. “Many patients quickly realized, often after the very first session, that it’s not dangerous to become exhausted.”

Dr. Josef Niebauer, session cochair, was the sole vocal skeptic.

“I’m just not buying it. I think these data should not be overinterpreted in the face of quite a high number of dropouts and mainly self-reported data,” said Dr. Niebauer of the University of Salzburg (Austria).

He added that although he believes aerobic interval training has a useful place in cardiac rehab, he believes it is currently in an “overhyped” phase within the field.

Dr. Moholdt’s study was funded by the Norwegian Foundation for Health and Rehabilitation. She declared having no financial conflicts. ■